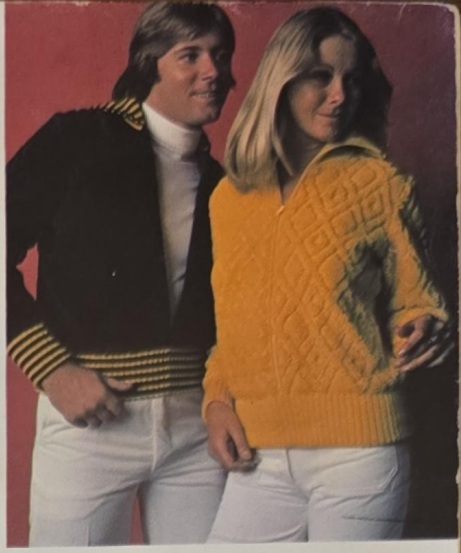

INSTRUCTION BOOK

Ribbing Attachment SRP-50

SINGER®

INSTRUCTION MANUAL
FOR THE RIBBING ATTACHMENT (RIBBER)

This is an ideal attachment for your knitting machine. The ribber converts the 200 needle knitting machine into a 400 needle unit that will perform all of the functions of a double bed knitting machine while maintaining the ease of operation, simplicity and the portability of a single bed machine.

It is very natural that you are excited and eager to start using this valuable attachment. However, please take a little time to make sure you can handle your main knitting machine before getting started with the advanced double bed knitting.

Please read the instruction manual for the main knitting machine before you start with this manual.

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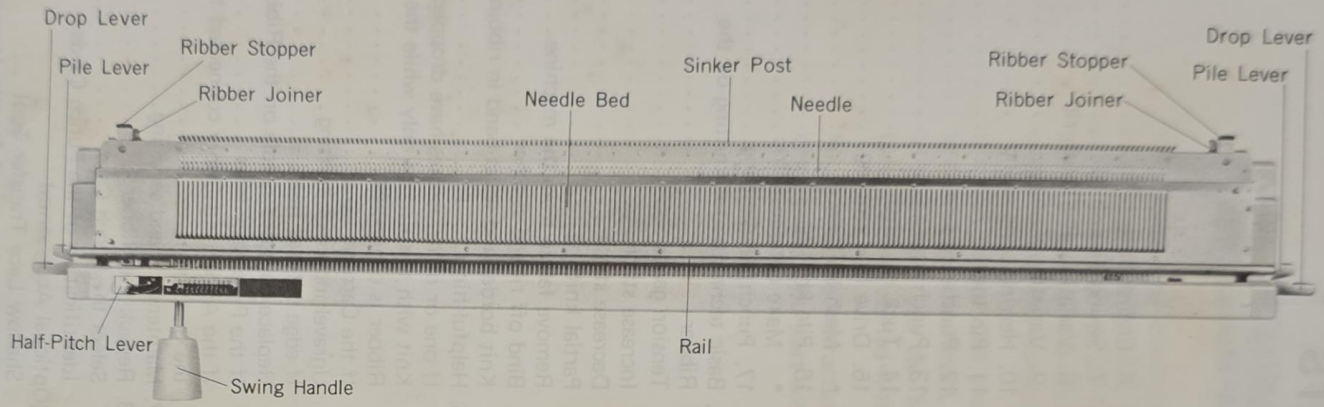
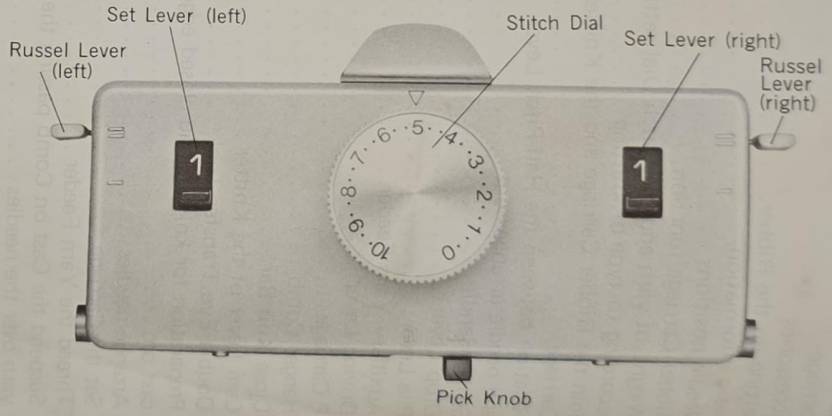
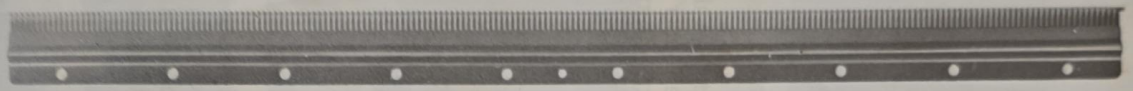
* Main Body *



* Carriage *

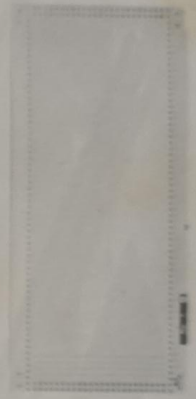


* Accessories *



Cast on Comb (long)

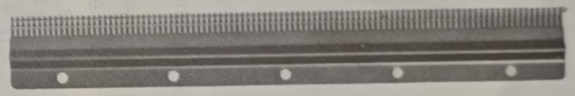
Close Knit Bar



Punch Card

P Carriage

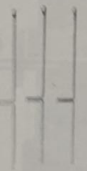
Arm



Cast on Comb

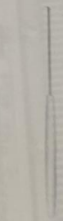
P Presser

Screw Driver



Needle

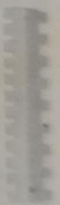
Double eye Transfer Tool



Hook Tool

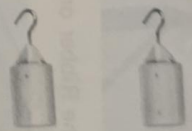
Auxiliary Piece

Clamp

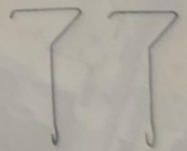


Needle Pusher
(ﾌｯｸｰﾌﾟ)

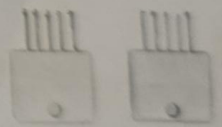
Weight



Edge weight

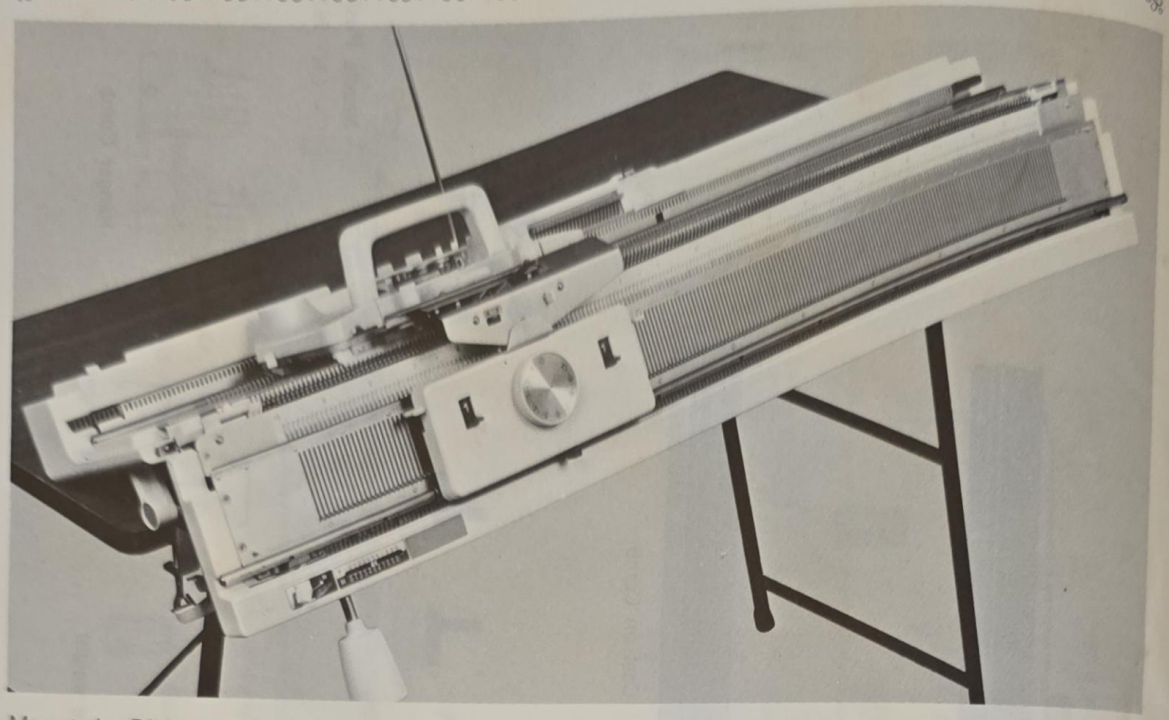


Side Hanger

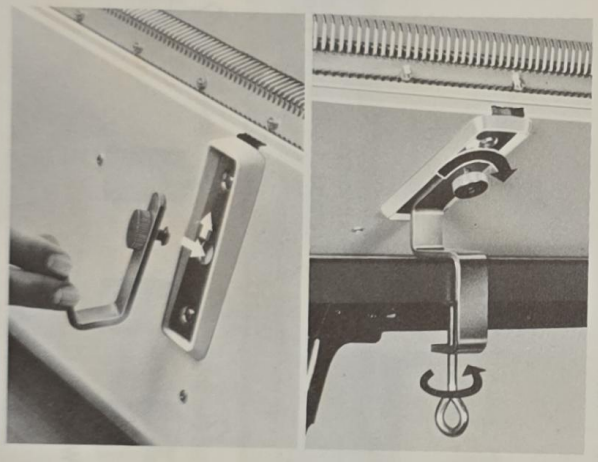


Hanger Comb

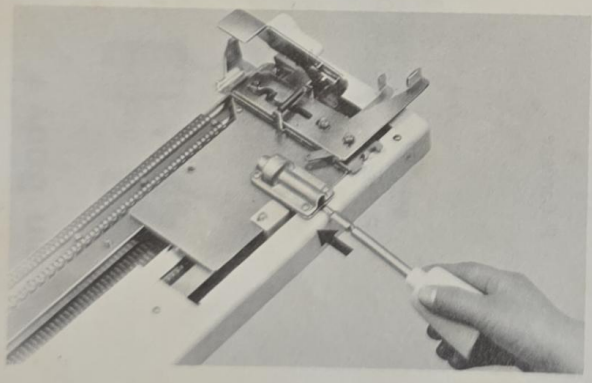
1. SETTING UP THE RIBBER



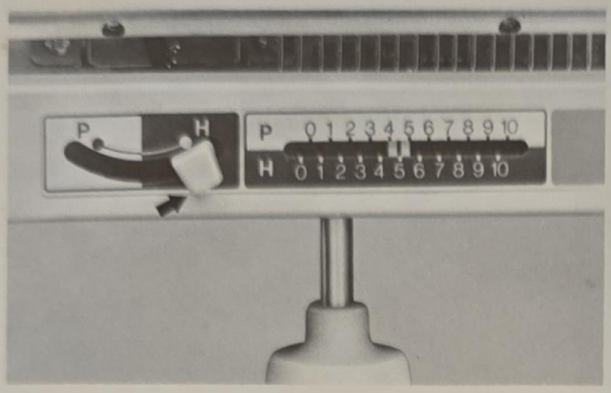
Mount the Ribber on the Knitter so that it is ready for knitting as shown in the photograph.



(1) Mounting holes are provided on the bottom of the Knitter. Secure the Ribber clamps to these holes, and mount the Knitter on the table by means of these clamps. (Do not use any other clamps.)

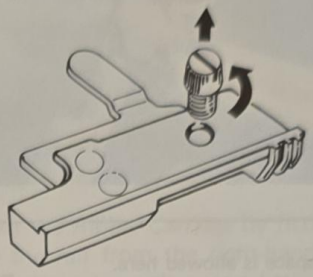


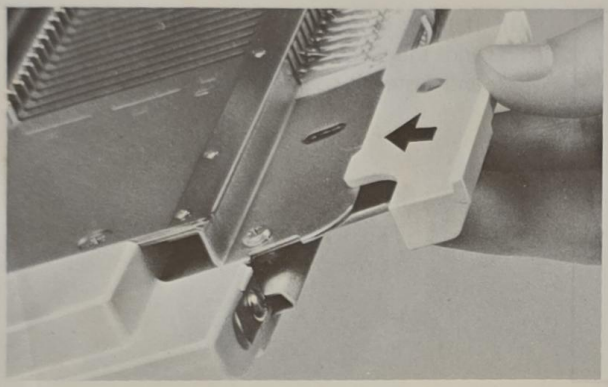
(2) Insert the forward end of the Swing Handle into the swing bearing, which is located in the lower left-hand side of the Ribber. Push the Handle in a twisting manner until you hear a sharp click with a slight jerk.



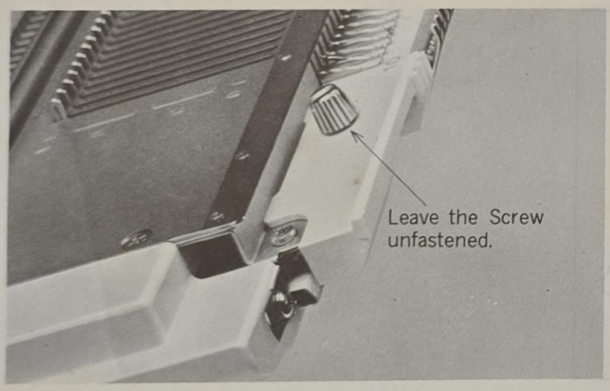
(3) Swing the Half Pitch Lever to the right(H). Turn the Handle to 5 on the Indicator.

(4) Remove the Ribber Join Screws from the Auxiliary Pieces.

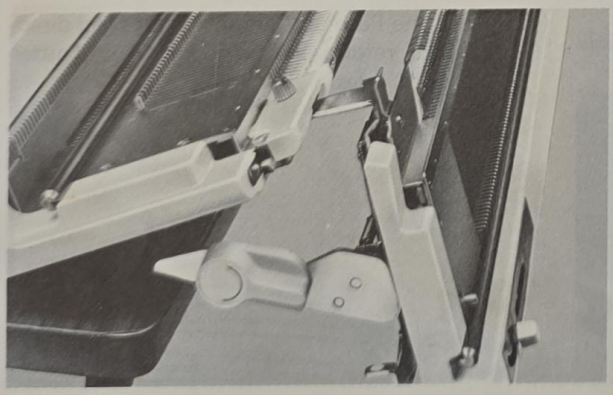




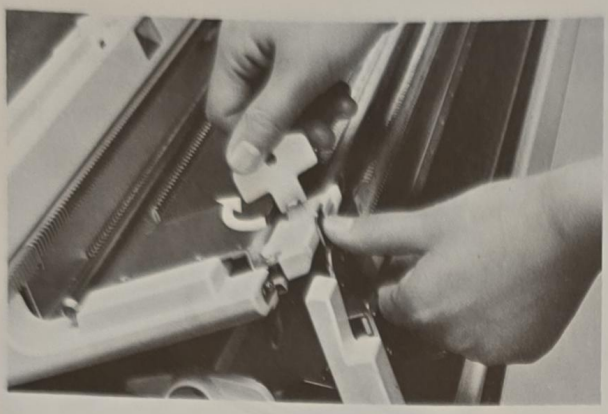
(5) Insert the Auxiliary Piece into the end of the front edge of the Needle Bed so that its hole overlaps with that on the front edge.



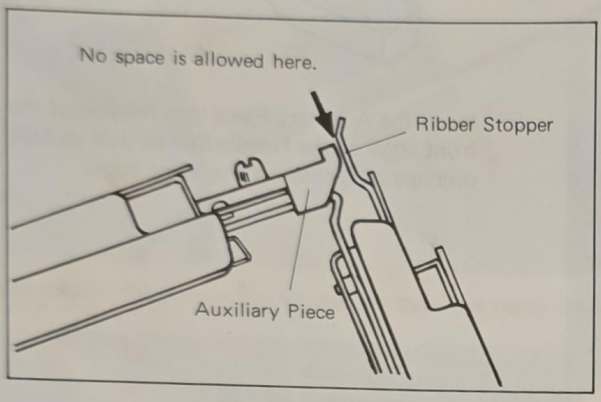
(6) Put the Screw back to the Auxiliary Piece by turning it 3–4 times. Do not tighten the Screw completely.



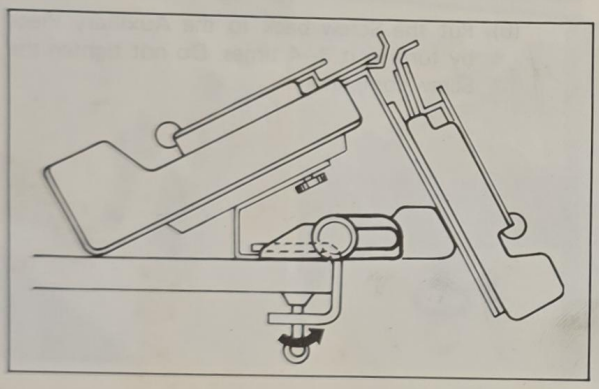
(7) With both hands hold the Ribber and insert the Ribber Joiners so as they are on the metal parts of the Auxiliary Pieces until the Ribber Stoppers reach the Auxiliary Pieces. For easy doing, insert the right side, then left side.



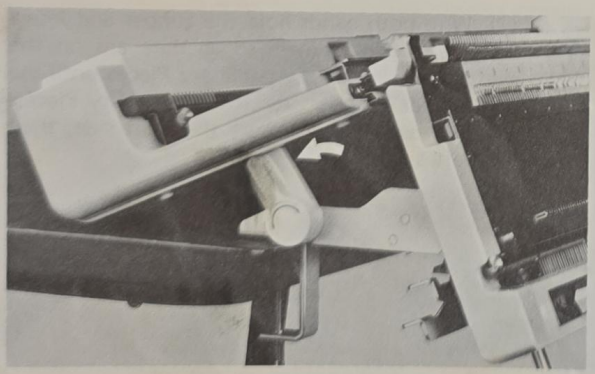
(8) Pushing up the Ribber Stopper to the Auxiliary Piece, fasten the Screw with the Screw Driver.



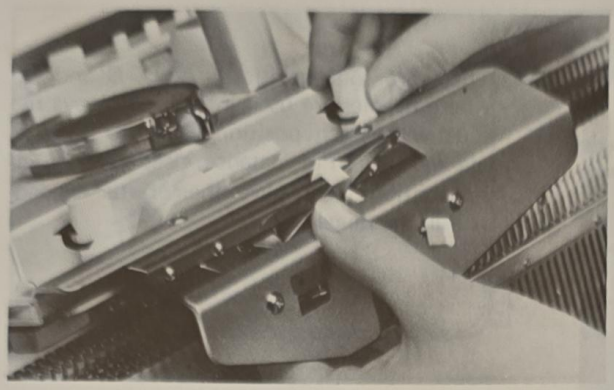
(9) If there is space between the Auxiliary Piece and the Ribber Stopper, loosen the Screw and fasten it again firmly as done in (8).



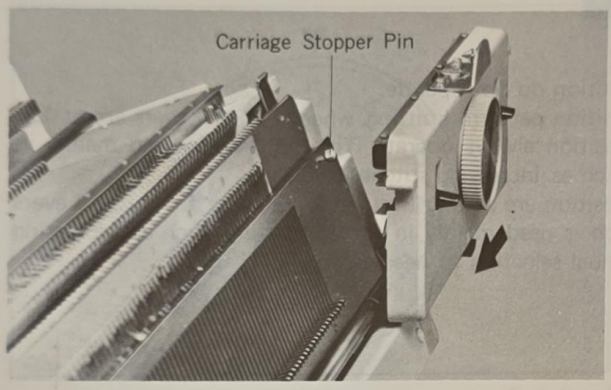
(10) Secure the Clamps (belonging to the Knitter) to the inner side of the Ribber Supports and fasten them to the table.



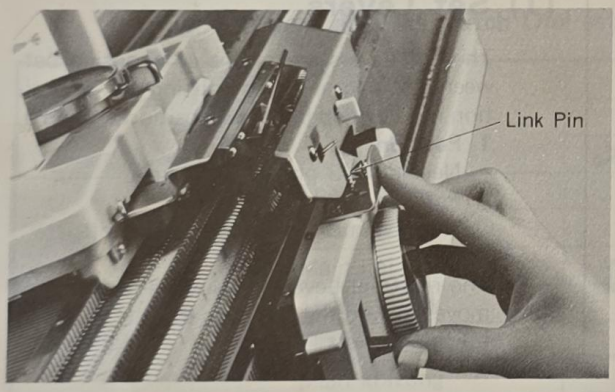
(11) Turn the Push-up Cam in the arrowed direction to reform the bending of the Knitter on both sides.



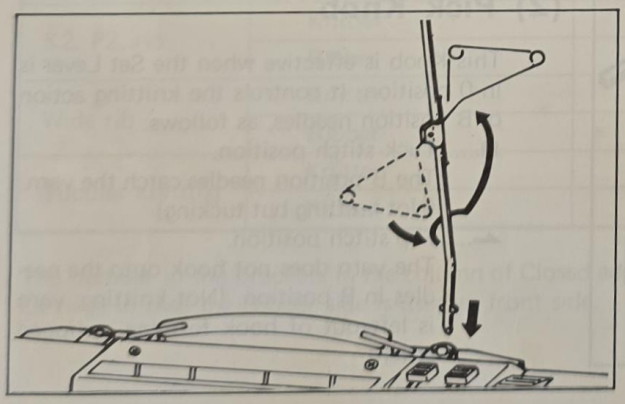
(12) Loosen the Knitter Carriage Arm Nuts. Insert the Ribber Arm as far as it will go and fasten the Arm Nuts. Set the Cam Lever to STOCKINET.



(13) Mount the Ribber Carriage by fitting its pipe onto the rail from the right-hand side. Tilt the Carriage towards you a little, so that it will clear the Carriage Stopper Pin. (The Ribber Carriage can be attached "only" from the right-hand side.)



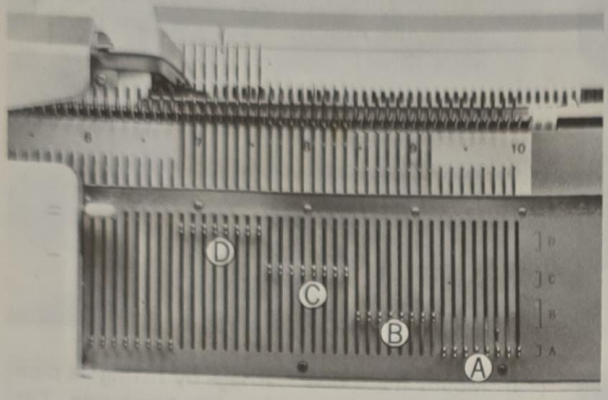
(14) Connect the Ribber Carriage to the Arm by fitting the Link Pin into the slot provided in the Arm which has been mounted to the Knitter Carriage. Be sure to push this Pin into the hole until a click is heard.



(15) Insert the Yarn Rod on the Knitter and set up the Auto-Tension and Tension Guide. The Yarn Rod should be inserted in the direction opposite to the direction for knitting without the Ribber. (When the Tension Guide is attached to the Yarn Rod it is on the front side. In this case, before lifting up the Tension Guide, push it to the left and turn forward. Lift the Tension Guide for threading.)

2. BASIC INFORMATION

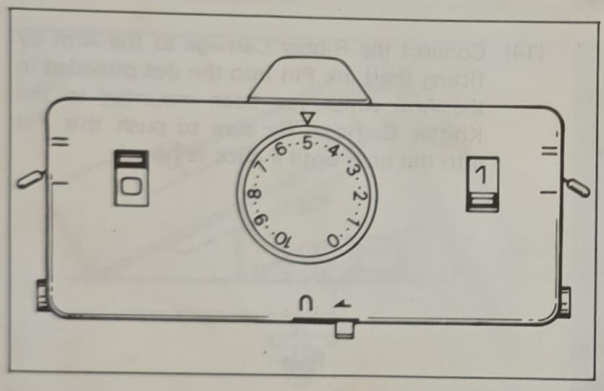
* Needle positions *



There are four positions, A, B, C and D, where needles are used in different ways respectively. Each position refers to a range marked by]. For instance, needles to be in A position must have their butts aligned within the range of A.

A position . . . . . Needles in this position do not operate.
B position . . . . . Needles in this position perform knitting when the Set Levers are at 1.
C position . . . . . Needles in this position always operate. This position is used mainly in partial knitting, such as increasing stitches.
D position . . . . . Needles in this position are resting (not working) with the Russel Levers at —. This position is used mainly in partial knitting, such as decreasing stitches, or in manual selection of needles.

* Ribber Carriage function *



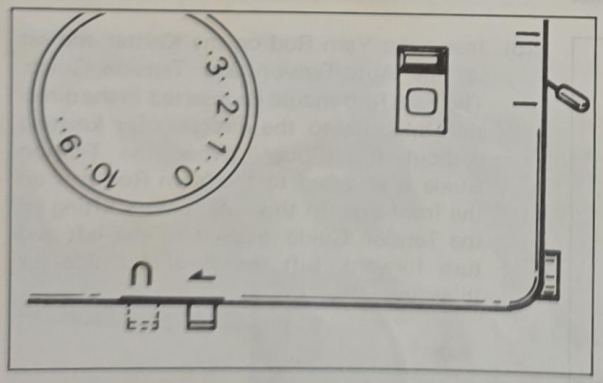
(1) Set Levers

The Set Levers are means of choosing between knitting and non-knitting for B position needles, and have two positions: 1 and 0.

1 Position
Needles in B position will knit.

0 Position
Needles in B position will not knit.

The right Set Lever works when the Carriage moves toward the right and the left Set Lever toward the left.

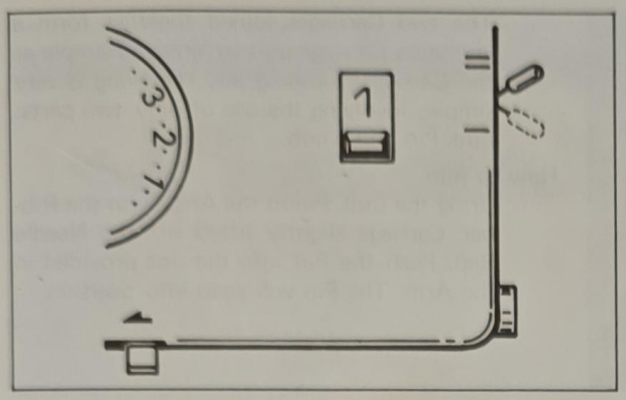


(2) Pick Knob

This Knob is effective when the Set Lever is in 0 position. It controls the knitting action of B position needles, as follows:

∩.....Tuck stitch position.
The B position needles catch the yarn. (Not knitting but tucking)

⌐.....Slip stitch position.
The yarn does not hook onto the needles in B position. (Not knitting; yarn is left out of hook forming a slipped stitch)



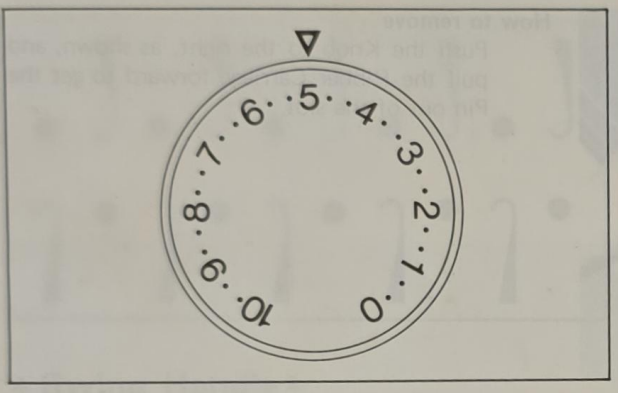
(3) Russel Levers

These Levers control needles in D position. They have two positions: ⚌ and =.

=.....D position needles will knit and be lowered to B position.

⚌.....D position needles remain and will not knit.

The right Russel Lever works when the Carriage moves towards the right, and the left Lever towards the left.



(4) Stitch Dial

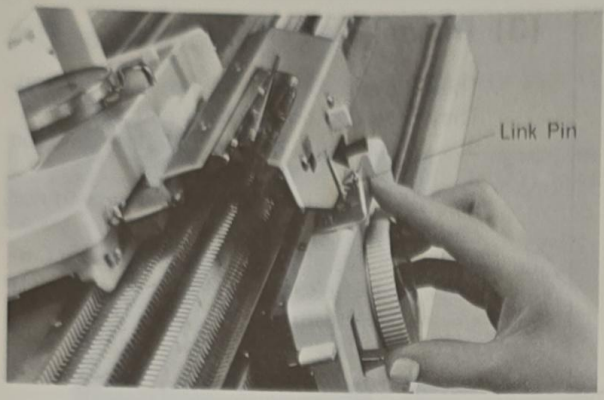
This Dial determines the size of the stitch to be made. Set any of numerals to the ▼ mark. The larger the number the larger the stitch, and the smaller the number the smaller the stitch. The factors of proper Stitch Dial settings are weight of yarn, type of knitting, and setting of the Knitter Stitch Dial.

Weight of yarn and the Stitch Dial setting according to type of knitting.

Type of Knitting		Weights of yarn			
		Thin	Light	Medium	Heavy
		① – ②	③	④	⑤
K1.P1. rib	The first row	–	0	0	0
	Closed edge cast on	–	0(2)	0(2)	2
	Main knitting	–	0–1	2–3	6–7
Double rib	The first row	0	0	0	–
	Closed edge cast on	0(2)	1(3)	2(4)	–
	Main knitting	0–1	1–2	3–4	–
K2. P2. rib	Knitter	–	2–3	3–4	6–7
	Ribber	–	2–3	3–4	6–7
Wide rib	Knitter	–	1–2	3–4	5–6
	Ribber	–	3–4	5–6	7–8
Tubular knitting	Knitter	2–3	4–5	5–6	–
	Ribber	4–5	6–7	7–8	–

The number in the brackets in the column of Closed edge cast on shows the Stitch Dial number on the Ribber Carriage in case the Ribber side is used as front side.

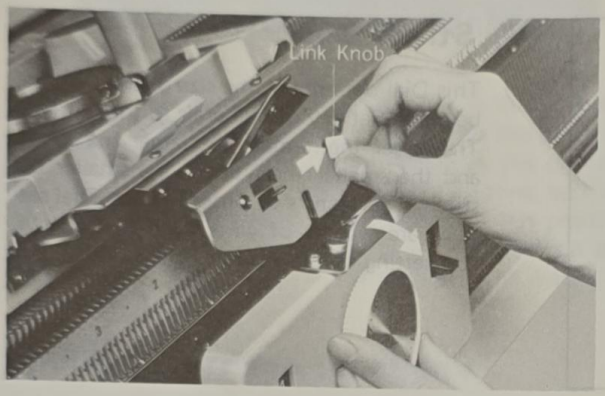
* Join the Ribber Carriage and the Knitter Carriage. *



The two Carriages joined together form a complete Carriage unit (referred to simply as the Carriage). Joining and removing is very simple, involving the use of only two parts: Link Pin and Knob.

How to join

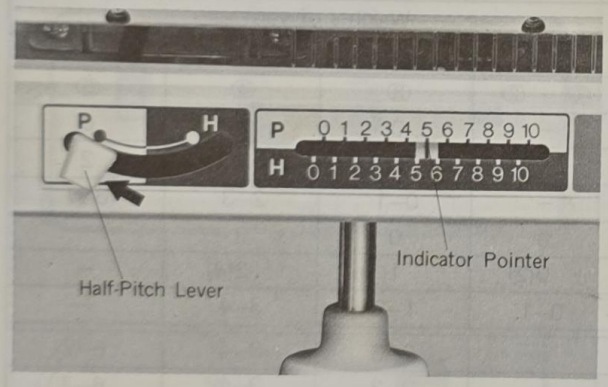
Bring the Link Pin to the Arm, with the Ribber Carriage slightly lifted off the Needle Bed. Push the Pin into the slot provided in the Arm. The Pin will snap into position.

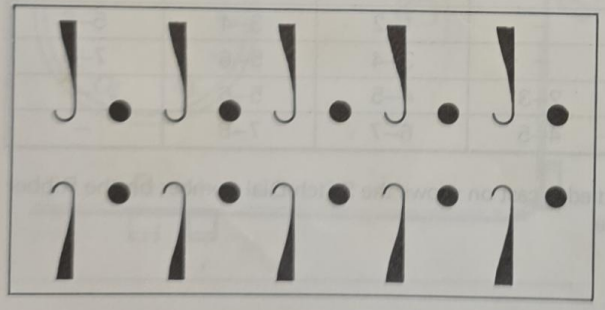


How to remove

Push the Knob to the right, as shown, and pull the Ribber Carriage forward to get the Pin out of the slot.

* Relation between the Half-Pitch Lever and needle arrangement. *



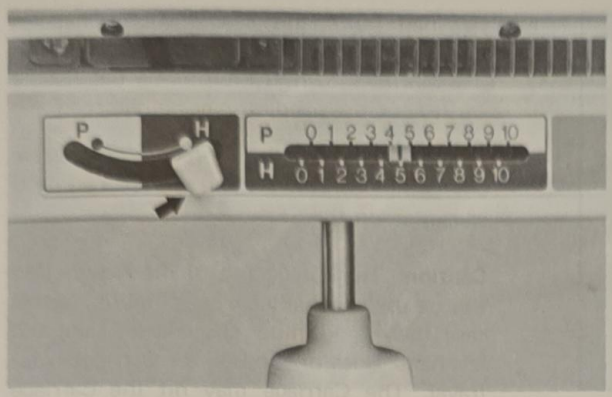


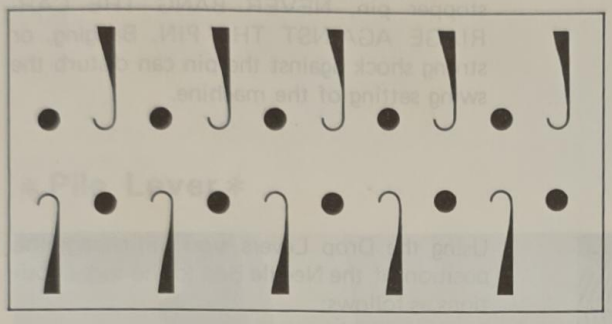
(How to match ribber needles to the Knitter needles.)

There are two possible positions the Ribber needles can take with respect to those of the Knitter. Which position the Ribber needles will take is determined by the Half-Pitch Lever, as follows:

P position (When Half-Pitch Lever is moved to the P on the left side.)

In this position, the two groups of needles are lined point-to-point. Advancing both groups of needles at the same time will make them collide, and must be avoided to protect the needles. In this case, push every other needle to A position so that needles of both Beds are staggered. This line up is for K1, P1, ribbing. With the Half-Pitch Lever in this position, the Indicator Pointer comes to a number on the P scale.

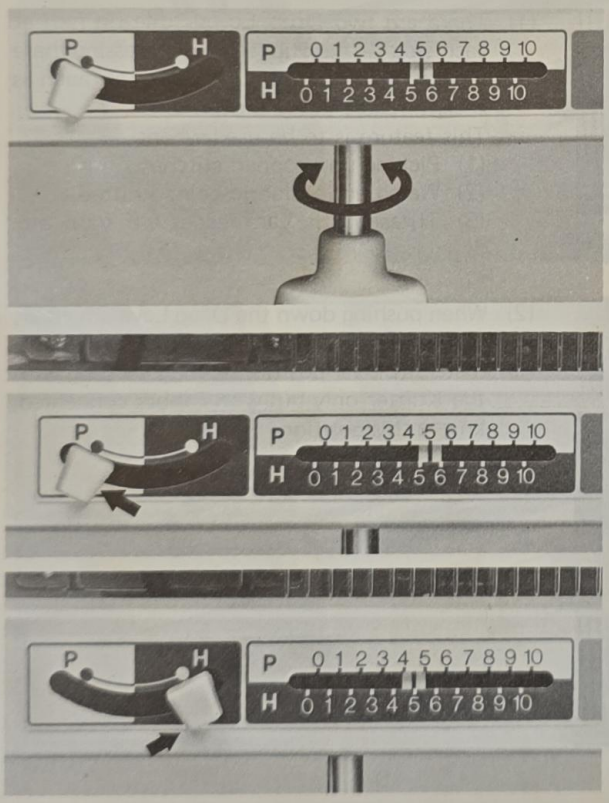




H position (When Half-Pitch Lever is moved to the H on the right side.)
Moving the Lever to the right staggers the Ribber needles by a half-pitch relative to the Knitter needles, as shown. The indicator Pointer gives a number on the H scale. Needles cannot collide with this arrangement. Double ribbing is made with this staggered line-up.
With the Half-Pitch Lever moved to the right (H) side, the amount of swing is to be read on the H (lower) scale.

(Note: "Pitch" is the distance between two adjacent needles.)

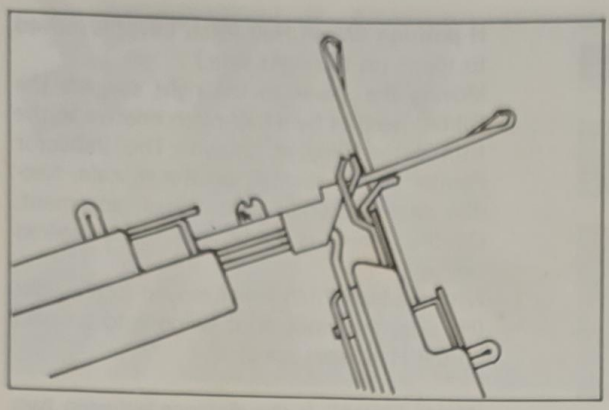
* Swing Handle *



The Swing Handle is for swinging, or shifting the Ribber Needle Bed from side to side. Maximum swinging is 10 pitches. Rotating the Handle, as shown, shifts the Ribber towards the right or the left.

This feature is used in making such swing patterns as HERRING BONE, etc.

The amount of swing or movement is indicated by a number. With the Half-Pitch Lever moved to the left (P) side, the amount of swing is to be read on the P (upper) Scale.
With the Half-Pitch Lever moved to the right (H), the amount of swing is to be read on the H (lower) Scale.

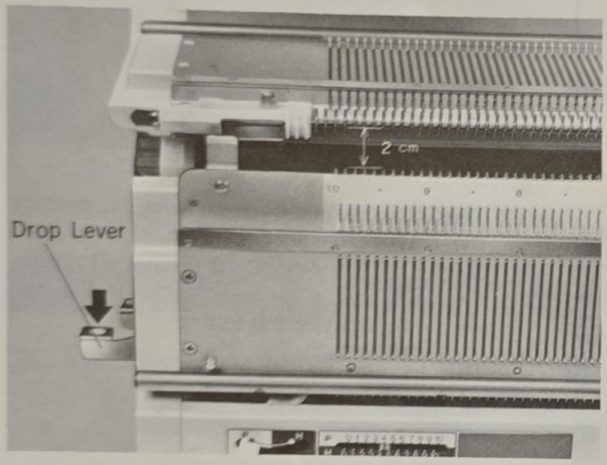


Note: * When both Knitter and Ribber needles are in D or C position and will cross each other as shown, do not swing the Needle Bed, or the needles may be damaged.

When the knitting operation does not involve any swing, turn the Handle so that the Pointer is at 5 on the Scale.

Caution: The full length of the Needle Bed can be used in making a broad fabric. In this case, there is not much space at the right and left-hand sides of the Bed for Carriage overtravel. The Carriage may hit the Carriage stopper pin. NEVER BANG THE CARRIAGE AGAINST THE PIN. Banging, or strong shock against the pin can disturb the swing setting of the machine.

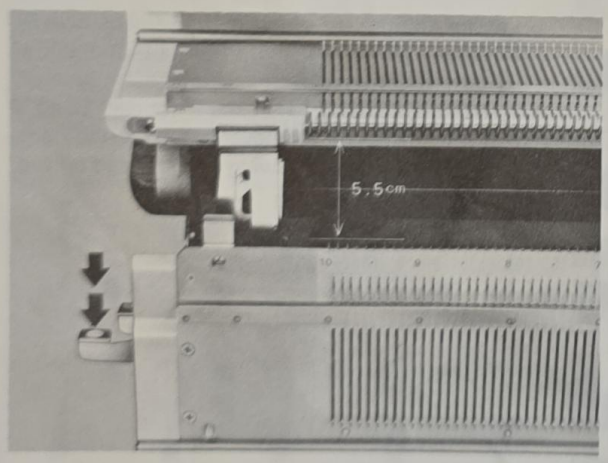
* Drop Lever *



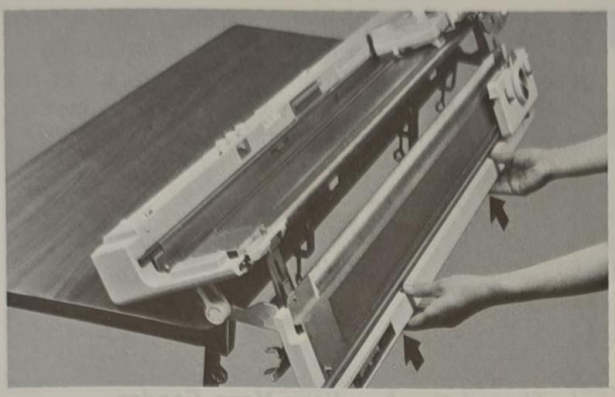
Using the Drop Levers, you can change the position of the Needle Bed to the three positions as follows:

1. Upper position:
2. Middle position:
3. Lower position:

(1) There are two Drop Levers, one (in red) at each side of the Ribber. By depressing these Levers, the Ribber can be lowered as much as 2 centimeters (Middle position).
This feature is to be used when:
(1) Picking up dropped stitches.
(2) Watching the fabric being knitted.
(3) Threading the yarn feeder with yarn, etc.



(2) When pushing down the Drop Levers further, the Ribber is lowered up to about 5.5 centimeters (Lower position). When knitting with the Knitter only but with Ribber connected, knit in this position.



(3) To restore the Ribber to the original position, lift it by hand as shown until a click is heard. When knitting with the Ribber, knit in this position.

* Pile Lever *

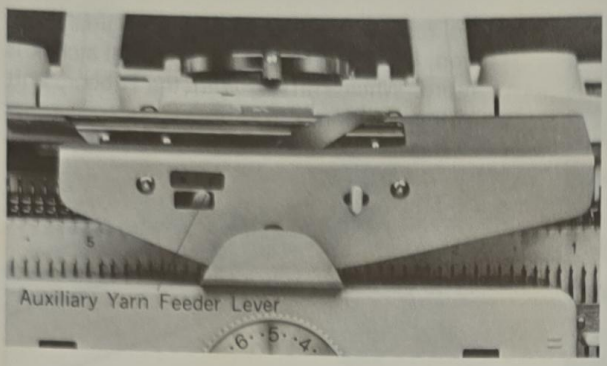
The Pile Lever is used to broaden the distance between the Knitter and the Ribber.

(How to broaden the distance between the Knitter and the Ribber.)

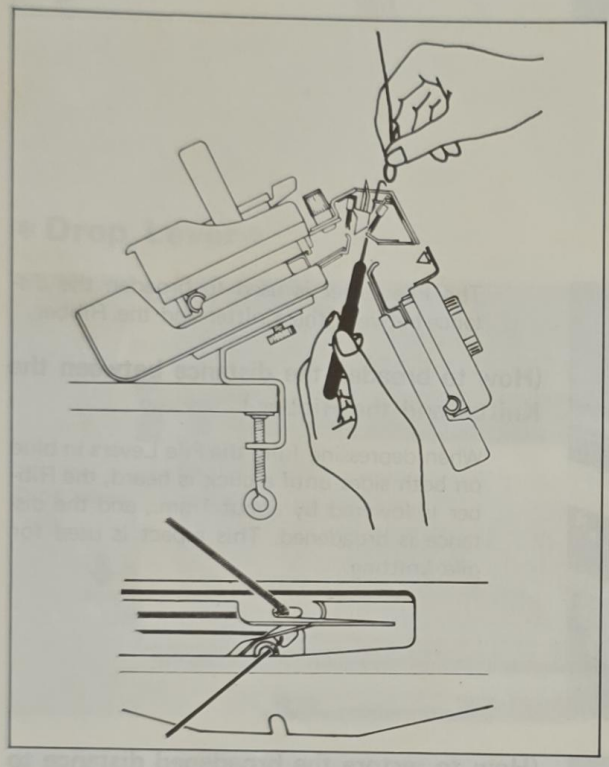
When depressing fully the Pile Levers in blue on both sides until a click is heard, the Ribber is lowered by about 1mm., and the distance is broadened. This aspect is used for pile knitting.

(How to restore the broadened distance to the original one.)

(1) Push up the Pile Lever as far as it goes until a click is heard. The Ribber is raised by about 1mm., and the distance between the Knitter and the Ribber is narrowed. This feature is to be used for K1. P1. rib, double rib, etc., other than pile knitting.



In pile knitting only, set the Auxiliary Yarn Feeder Lever mounted on the Arm to the P mark on the right side. Be sure to set the Lever to the ● mark on the left side when pile knitting is finished.



Thread the Auxiliary Yarn Feeder.

(1) Move the Carriage to the right end of the machine.

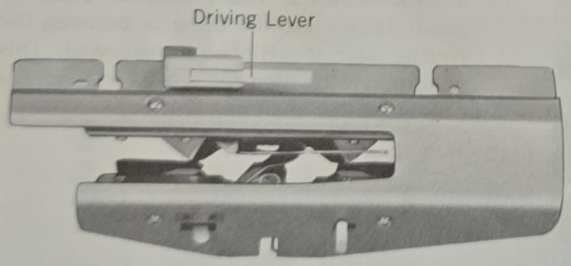
(2) Set the Auxiliary Yarn Feeder Lever to P (right) position and lower the Needle Bed to the middle position by pushing down the Drop Levers.

(3) Thread the knitting yarn (wooly nylon) through the Auto-Tension and make a loop at the end.

(4) Insert the Hook Tool into the Auxiliary Yarn Feeder from underneath and hook the loop and pull it down as shown.

(5) Tie the yarn end to a Weight Hook.

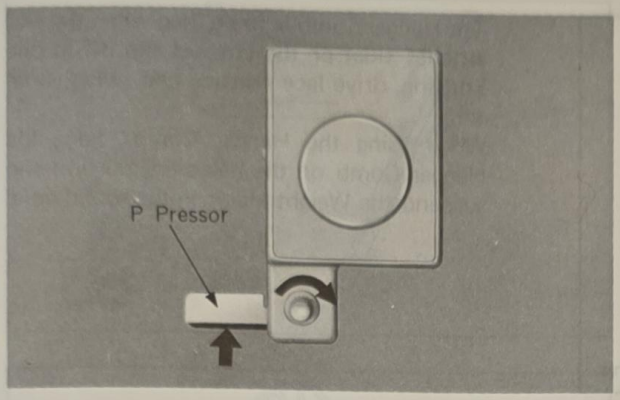
＊Driving Lever＊



* The Driving Lever is for operating the Yarn Changer (option). Keep it in the rest position when it is not in use.

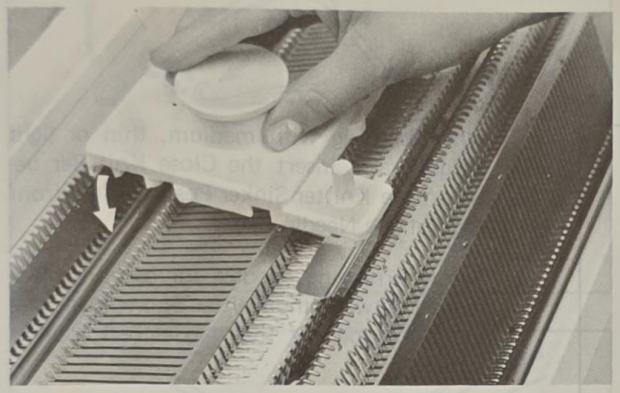
* If it is raised, slightly pull it upwards with your fingers and then and lay it down.

＊P Carriage＊

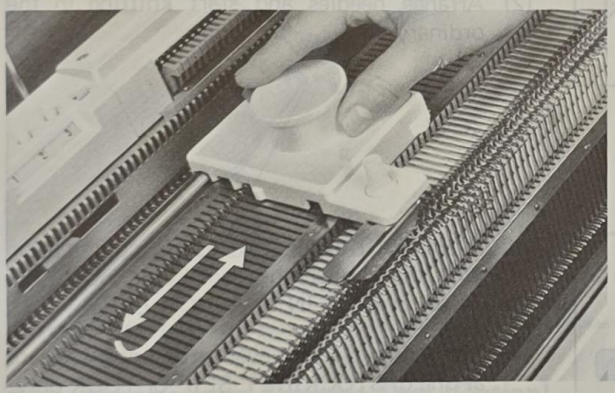


The P Carriage is used for removing the stitches on the Knitter side in pile and drive lace knitting and bringing needles on the Ribber side into C position.

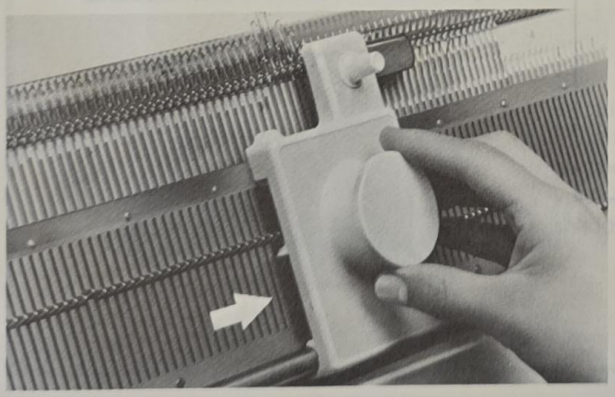
* When using the P Carriage during pile knitting, attach the P Presser to it. In other cases, the P Presser is not used.



(1) When removing stitches on the Knitter side:
Put the P Carriage on the Needle Bed on the right side of the knitting needles on the Knitter. (When the P Carriage is attached with the P Presser, place the P Presser firstly on the fore part of the Sinker Posts on the Needle Bed and then the rear part of the P Carriage onto the rail on the Needle Bed).



(2) When moving the P Carriage from right to left, needles on the Knitter side are lined in C position.
When moving the P Carriage from left to right, needles on the Knitter side are restored to B position. (The stitches on the Knitter are removed.)



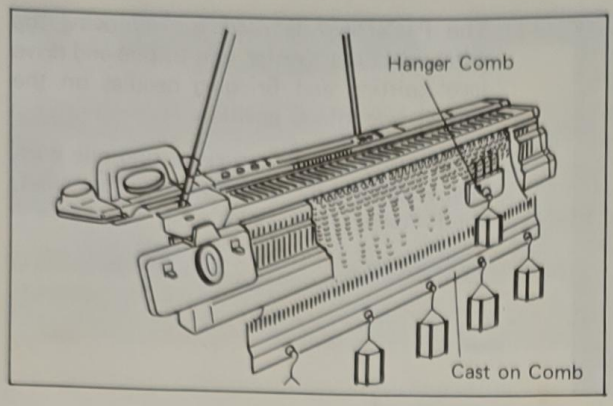
In the Case of bringing needles on the Ribber side to C Position:

(1) Put the P Carriage on the Needle Bed on the left side of the knitting on the Ribber. (When the P Carriage is attached with the P Presser, place the P Presser firstly in the Sinker Post on the Needle Bed and put it on the rail of the Needle Bed.)

(2) When moving the P Carriage from left to right, the needles on the Ribber side are pushed to D position once and then returned to C position forming in a line.

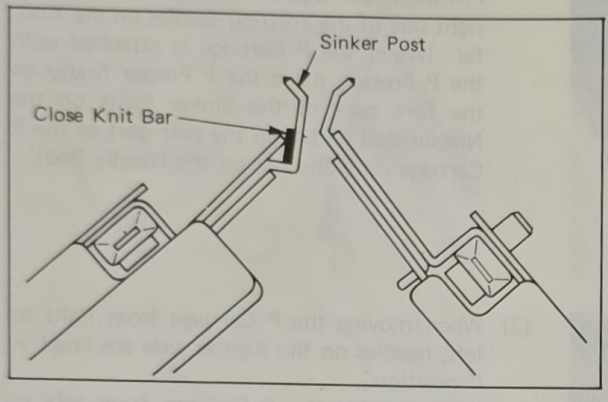
* Whichever the side of the Carriage may be, the P Carriage must be moved from left to right.

* Hanger Comb *



The Hanger Comb is to be used when the end stitches float or the stitches slip off in pile knitting, drive lace knitting and swing variation.
When using the Hanger Combs, hang the Hanger Comb on the necessary portion and suspend the Weight Hook in the round hole.

* Close Knit Bar *

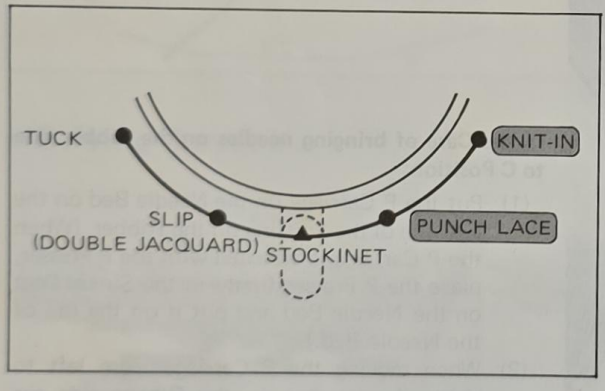


When knitting with medium, thin or light weight yarn, insert the Close Knit Bar between the Knitter Sinker Posts and the front edge of the Needle Bed.

(1) Before arranging needles for cast-on, place the Bar between the Knitter Sinker Posts and the front edge of the Needle Bed as illustrated.

(2) Arrange needles and start knitting in the ordinary way.

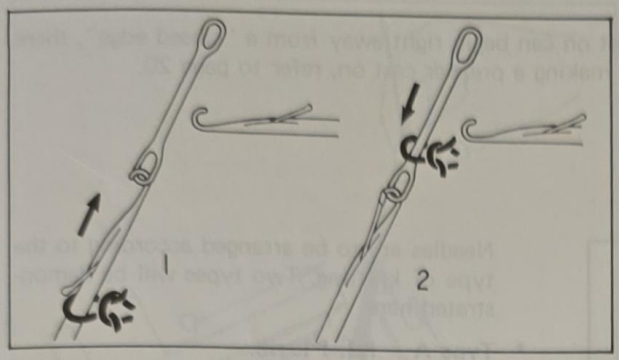
* Cam Lever of the Knitter *



* When the Knitter is in use in combination with the Ribber, the Cam Lever should not be set at KNIT-IN or PUNCH LACE.

The required Cam Lever setting positions are at one of STOCKINET, SLIP, or TUCK only.

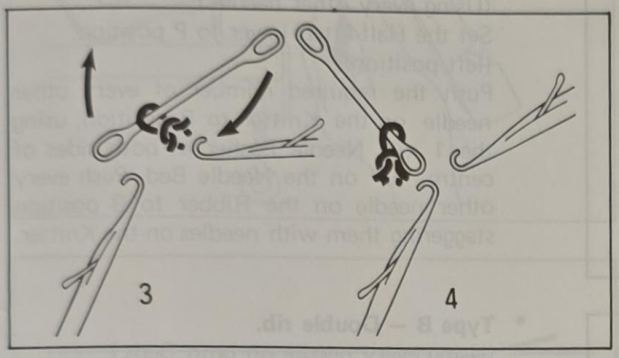
* Double Eye Transfer Tool *



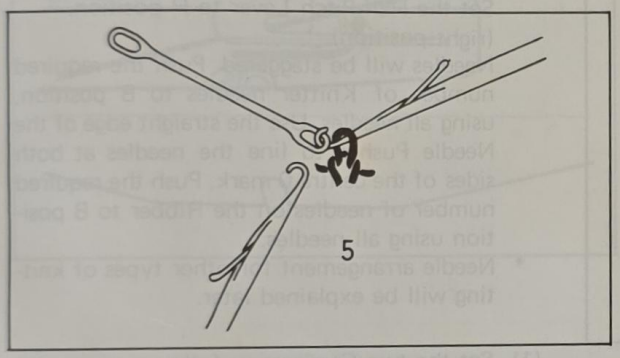
The Double Eye Transfer Tool is used to transfer stitches from the Ribber needles to the Knitter needles or vice versa.

From the Ribber needles to the Knitter needles.

(1) Catch the Ribber needle hook by passing the hook through the eye of the Transfer Tool. Slide the stitch over onto the Tool. (Fig. 1, 2)



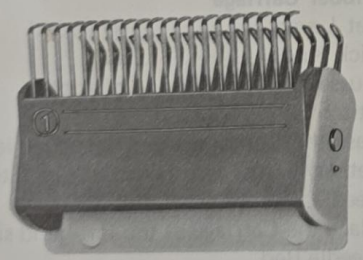
(2) Tilt the Tool and slide the stitch towards the other eye. (Fig. 3, 4)



(3) Engage the other eye onto the Knitter needle hook, and slide the stitch off the Tool onto the needle. (Fig. 5)

* This method can also be applied when transfering stitches from the Knitter to the Ribber.

Shadow Lace Transfer Tool (Option)

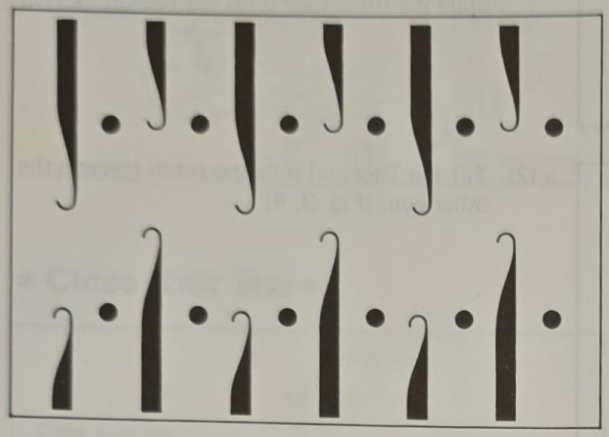


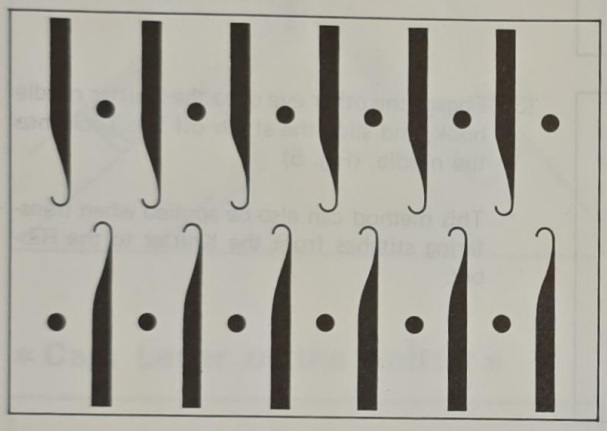
By using the Shadow Lace Transfer Tool, a number of stitches (up to 20 stitches) can be transferred at once from the Knitter to the Ribber and vice versa. In combined use with the Punch Card, shadow lace knitting can be worked.

3. PREPARATIONS FOR KNITTING AND CLOSED EDGE CAST ON

With the Knitter connected with the Ribber, a cast on can begin right away from a "closed edge", there being no need for making waste knitting, etc. For making a prettier cast on, refer to page 20.

* Arrange needles *





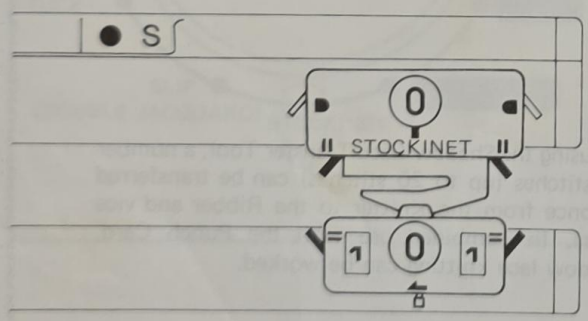
Needles are to be arranged according to the type of knitting. Two types will be demonstrated here.

* **Type A — K1, P1, rib.**
(Using every other needle.)
Set the Half-Pitch Lever to P position, (left position).
Push the required number of every other needle on the Knitter to B position, using the 1 x 1 Needle Pusher at both sides of centre, "0" on the Needle Bed. Push every other needle on the Ribber to B position staggering them with needles on the Knitter.

* **Type B — Double rib.**
(Using every needle on both Beds.)
Set the Half-Pitch Lever to H position. (right position).
Needles will be staggered. Push the required number of Knitter needles to B position, using all needles. Use the straight edge of the Needle Pusher to line the needles at both sides of the centre 0 mark. Push the required number of needles on the Ribber to B position using all needles.

* Needle arrangement for other types of knitting will be explained later.

* Set the Carriage *



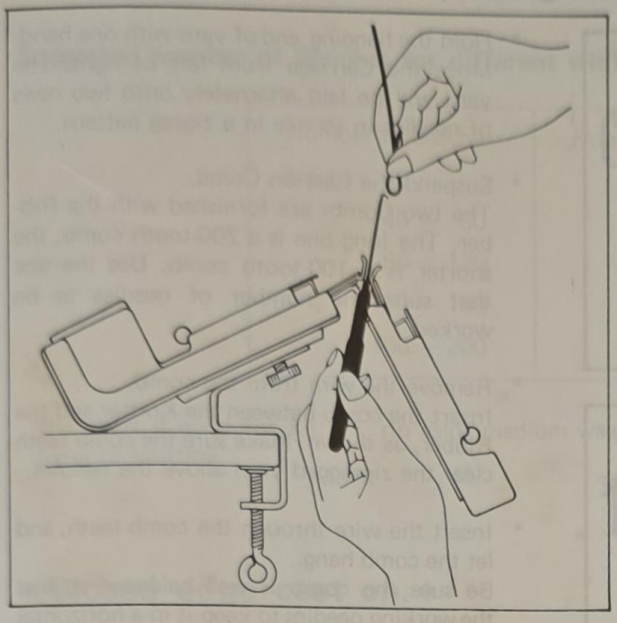
(1) Set the two Carriages as follows:

Knitter Carriage
Cam Lever . . . . . STOCKINET
Russel Levers . . . . . II (both)
Side Levers . . . . . (both)
Stitch Dial 0

Ribber Carriage
Set Levers . . . . . ① (both)
Pick Knob . . . . . ◢
Russel Levers . . . . . = (both)
Stitch Dial 0

(2) Pass the Carriage (two Carriages locked together) across two or three times to line the needles evenly.
Place the Carriage at the left-hand side of the Needle Bed.
(Needles on both Beds align in B position with their latches open.)

＊Thread the Yarn Feeder＊

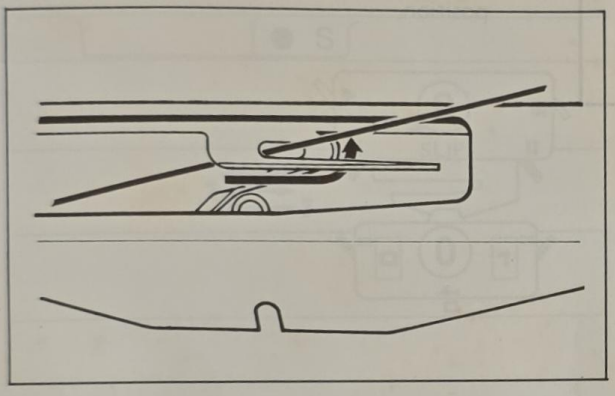


* When knitting from the left side.

(1) After threading the Auto-Tension, make a loop at the end of the yarn and hold it at the left side of both Beds opposite to the Carriage, as shown.

(2) Insert the Hook Tool from underneath both Needle Beds and catch the yarn end, pulling it down. Hold the yarn end.

(3) Move the Carriage from right to left and place it before the yarn.

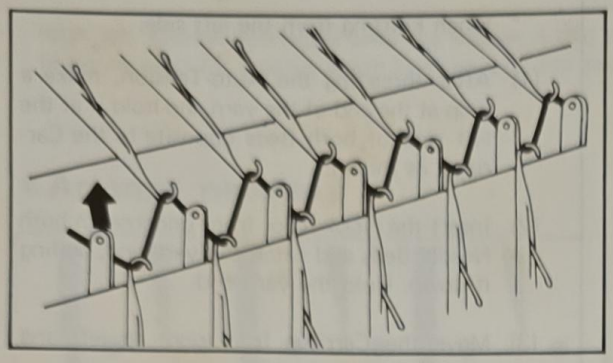


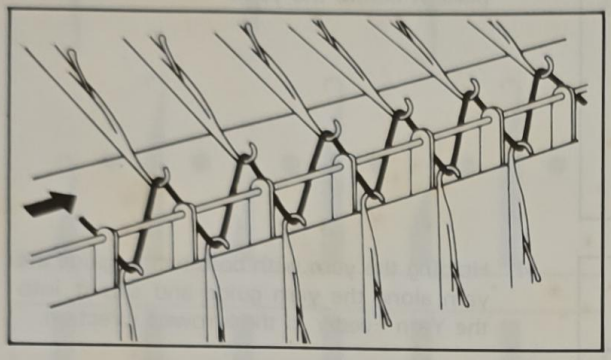
(4) Holding the yarn with both hands, guide the yarn along the yarn guide and slip it into the Yarn Feeder in the arrowed direction.

* When knitting from right side.

Insert the yarn end between both Needle Beds in the same manner as above with the Carriage at the right side. Thread the Yarn Feeder.

* Suspend the Cast on Comb passing the yarn over the needles. *





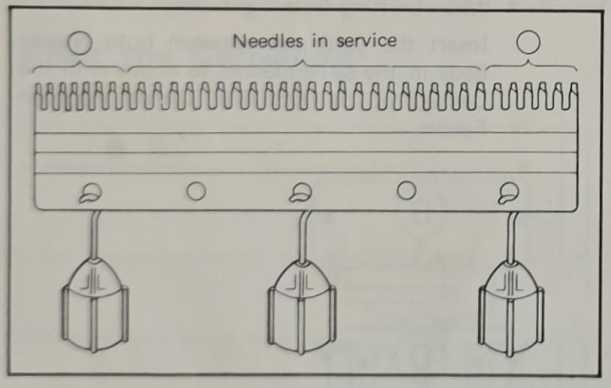
* Hold the hanging end of yarn with one hand. Move the Carriage from left ot right. The yarn will be laid alternately onto two rows of needles in service in a zigzag pattern.

* Suspend the Cast on Comb.
The two Combs are furnished with the Ribber. The long one is a 200-tooth comb, the shorter is a 100-tooth comb. Use the one that suits the number of needles to be worked.

* Remove the wire from the comb.
Insert the comb between the Knitter and the Ribber, as shown. Make sure the comb teeth clear the zigzagged yarn above the needles.

* Insert the wire through the comb teeth, and let the comb hang.
Be sure the comb is well balanced against the working needles to keep it in a horizontal position.

* Suspend the Weights *



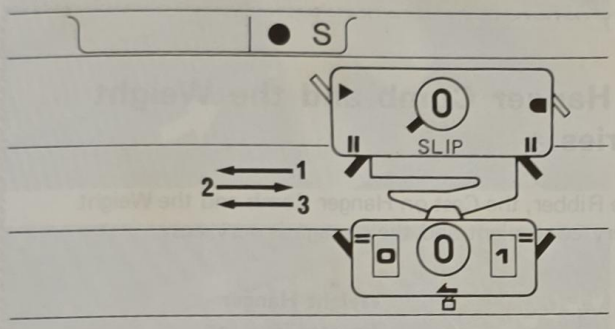
* The chart below at the top of the next page serves as a reference for determining the number of Weights that should be attached to the Comb.

Suggested number of Weights for different widths of knitting.

Number of stitches	Number of Weights
Up to 40	1
40 – 80	2
80 – 120	3
120 – 160	4
160 – 200	5

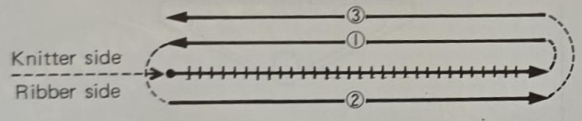
The chart is good for K1. P1. rib using medium weight yarn and can be used as a rough guide for other types of knitting.

* Closed edge cast on. *



(1) After laying the yarn over needles on both Beds in a zigzag pattern by moving the Carriage from left to right, set the Carriages as follows:

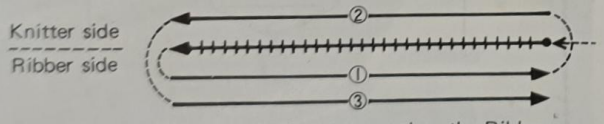
The Knitter
Cam Lever . . . . . SLIP
Side Lever . . . . . ▲ left ● right
The Ribber
Set Lever . . . . . 0 left 1 right



(The closed edge cast on when the Knitter side is used as front side.)

(2) Knit 3 rows. The Knitter needles will knit, the Ribber needles will knit at the 2nd row, and the Knitter needles will knit at the 3rd row. (Tubular knitting)

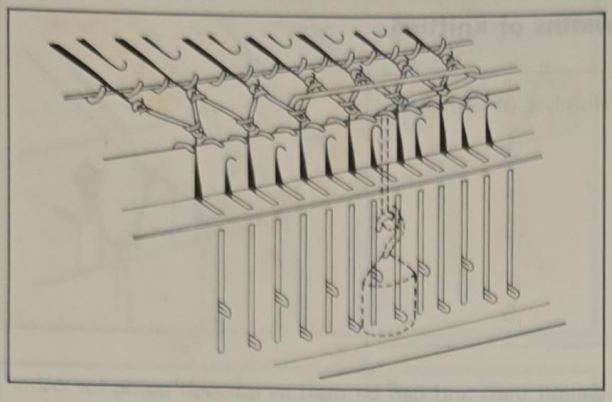
* This closed edge cast on knitting one extra row on the Knitter needles, is used when the Knitter side of fabric is to be used as front side.



(The closed edge cast on when the Ribber side is used as front side.)

* On the contrary, when the Ribber side is to be used as the front side, reverse the cast on direction that is from left to right knitting one extra row on the Ribber side.

* Edge Weights *

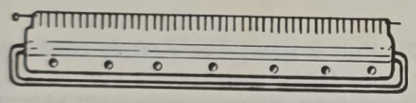


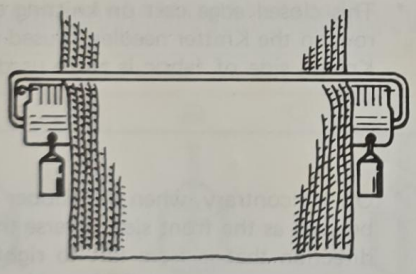
* There are two Edge Weights with the accessories. These Weights with side hangers should be suspended from the yarn zigzagging between the two groups of needles, as shown, in order to prevent the tendency of edge portions to float.
The Edge Weight must be brought in from underneath, through the clearance between Knitter and Ribber, to pass the hook over the zigzagging yarn. Resume knitting and knit ten or more rows. Repeat the above procedure by moving the Edge Weights up in order to attain better results.

* How to use the Cast on Hanger Comb and the Weight Hanger, optional accessories. *

In addition to the Weights accompanying the Ribber, the Cast on Hanger Comb and the Weight Hangers are available separately. They are very convenient and their usage is very easy.

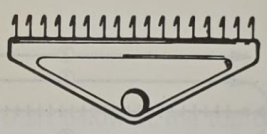
Cast on Hanger Comb

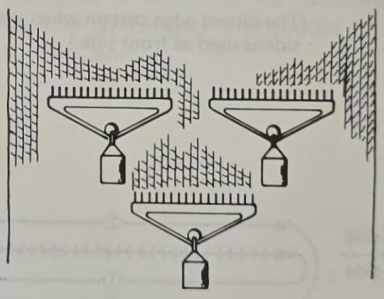




Use the Cast on Hanger Comb when knitting long fabric, It can be suspended on the fabric with equal balance and does not damage the fabric.

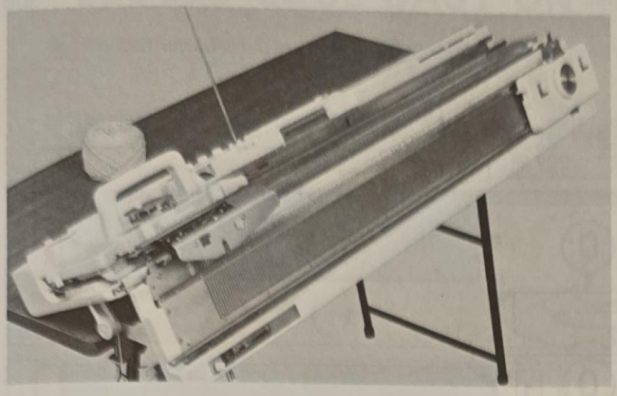
Weight Hanger
3 pieces in a set





Use the Weight Hangers individually, especially when knitting partial knitting. They can also be used when knitting on the Knitter only.

* Technique for making an attractive cast on row. *

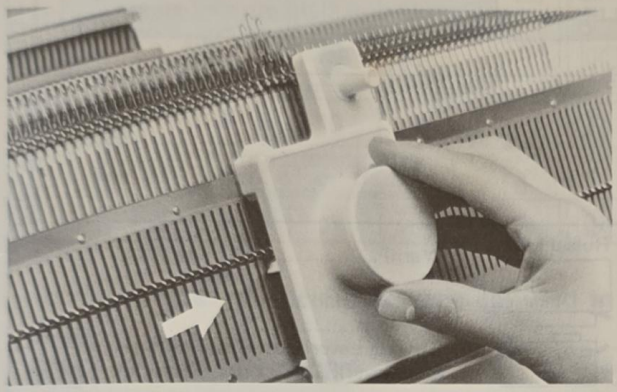


In order to prevent stitches of the first cast on row from being loosened when knitting with very thin yarn or smaller Stitch Dial number, the following cast on method is recommended.

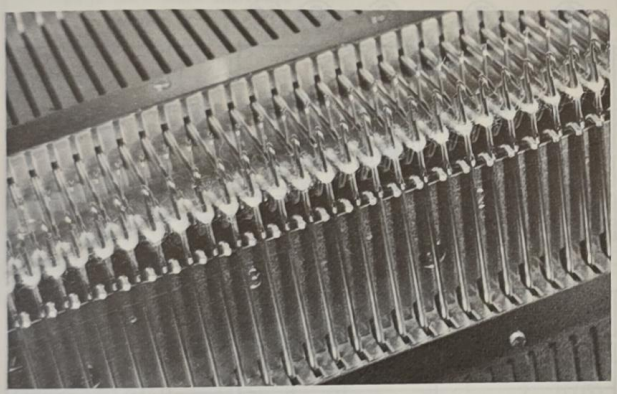
* Attach the Close Knit Bar between the Knitter Sinker Posts and the front edge of the Needle Bed as shown.

(1) Disconnect the Ribber Carriage and move it to the right end.

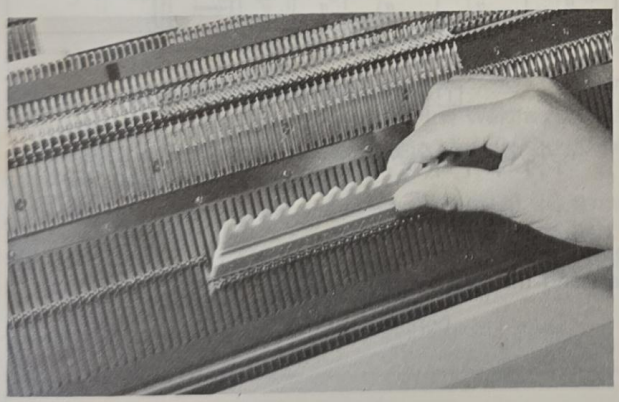
(2) Push up required number of needles to B position in K1, P1, or double rib needle arrangement.



(3) Locate the P Carriage (without the P Presser) on the left side of the Ribber Needle Bed and move the P Carriage to the right. Remove the P Carriage. Note that the working needles have now been aligned in C position from B position. Latches of the working needles are opened.



(4) Set the Knitter Carriage for normal casting on with the Stitch Dial at 0. Thread the Yarn Feeder and move the Knitter Carriage only from left to right. The yarn is now passed through the hooks of the Knitter needles and over the open latches of the Ribber needles.



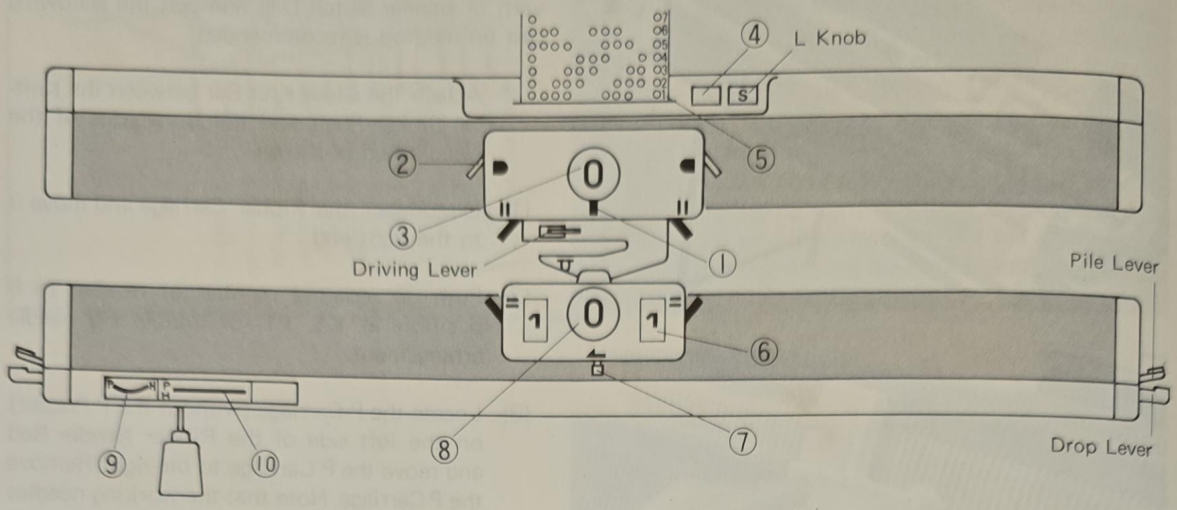
(5) With the Needle Pusher, push the Ribber needles in C position down to B position.

(6) Suspend the Cast on Comb and Weights.

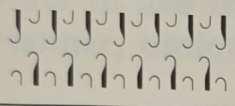
(7) Connect the Ribber Carriage with the Knitter Carriage, and complete the closed edge cast on. As to the closed edge cast on, refer to page 18.

4. VARIOUS TYPES OF KNITTING

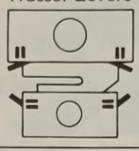
* Operation Table *



❶ NEEDLE ARRANGEMENT
CAST ON / MAIN KNITTING

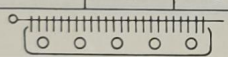


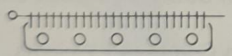
Russel Levers



(Yarn) ..... Medium (Main Yarn Feeder)
(Tension Dial) 3
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

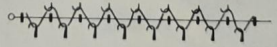
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

ORDER		KNITTER					RIBBER					DIRECTION	REMARKS
		CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.			
❷ CAST ON	1	STOCKI-NET	■ ■	0	●		① ①		0	P	5	→	Start from the left side. (When the Knitter side is used.)
	2												
	3	SLIP	▲ ■	〃	〃		⓪ ①	〃	〃	〃	〃	⇄ 3	
❸ MAIN KNITTING	1	STOCKI-NET	■ ■	2	〃		① ①	〃	2	〃	〃	→	To be repeated.
	2	〃	〃	〃	〃		〃	〃	〃	〃	〃	←	

 ..... Suspend the Cast on Comb.

..... Hook the Weight.

..... Operate the P Carriage. (Arrow indicates the direction of the P Carriage with the Presser.) (Refer to page 37.)

 ..... Method of suspending the Cast on Comb.

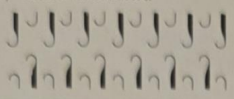
* The operation table is divided into three sections, Order ❶, Order ❷, and Order ❸. Set the controls of the Carriages as in Order ❶. The Stitch Dial numbers and the Auto-Tension number will vary according to the thickness of yarn. (Refer to page 6.)

1 CLOSED EDGE CAST ON

The sequence of the closed edge cast on is explained in the following tables.

If the stitches on the Knitter side are used as the front side. (K1. P1. rib)

❶ NEEDLE ARRANGEMENT
CAST ON / MAIN KNITTING



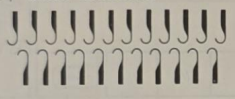
Russel Levers

(Yarn) ..... Medium (Main Yarn Feeder)
(Tension Dial) 3
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

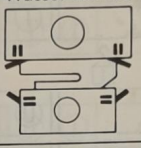
ORDER		KNITTER CAM LEV.	KNITTER SIDE LEV.	KNITTER STITCH DIAL	KNITTER STOP KNOB	KNITTER CARD MEM.	RIBBER SET LEV.	RIBBER PICK KNOB	RIBBER STITCH DIAL	RIBBER SWING IND. H-P LEV.	DIRECTION	REMARKS
❷ CAST ON	1	STOCKINET		0	●		① ①		0	P 5	→	Start from the left side.
	2											
	3	SLIP	▲	〃	〃		⓪ ①	〃	〃	〃 〃	⇄3	Closed edge cast on.

If the stitches on the Ribber side are used as the front side. (double rib)

❶ NEEDLE ARRANGEMENT
CAST ON / MAIN KNITTING



Russel Levers



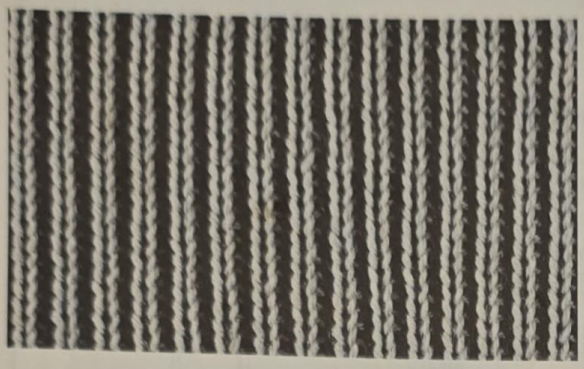
(Yarn) ..... Medium (Main Yarn Feeder)
(Tension Dial) 3
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER CAM LEV.	KNITTER SIDE LEV.	KNITTER STITCH DIAL	KNITTER STOP KNOB	KNITTER CARD MEM.	RIBBER SET LEV.	RIBBER PICK KNOB	RIBBER STITCH DIAL	RIBBER SWING IND. H-P LEV.	DIRECTION	REMARKS
❷ CAST ON	1	STOCKINET		0	●		① ①		0	H 5	←	Start from the right side.
	2											
	3	SLIP	▲	0	〃		⓪ ①	〃	2	〃 〃	⇄3	Closed edge cast on.

Prior to knitting, note the following.

* Suspend the Cast on Comb with the Weights so that it is well balanced horizontally.
* The first row and the closed edge cast on should be knitted with a tighter Stitch Dial number than the original one . (Refer to page 6.)
* Keep the Stop knob on the Pattern Panel at the ● mark except for pattern knitting using the Punch Card.
* Keep the Auxiliary Yarn Feeder Lever at the ● mark (left) except for pile knitting or punch pile knitting.
* If you have already completed the cast on directions, when you start referring to the chart, follow the steps in the Order ❸ (MAIN KNITTING).
* Steps in the Order ❸ will be repeated.

2 KNIT 1 PURL 1 RIB



This is the fundamental rib stitch. Every other needle is used on the Knitter as well as on the Ribber. On both the right and wrong sides of the fabric, the right side of the stitch (knit) and the wrong side of the stitch (purl) show up alternately. The fabric is soft and, in the horizontal direction (in the direction of the stitch), particularly elasticy.

* The example demonstrated here uses medium-weight woolen yarn.

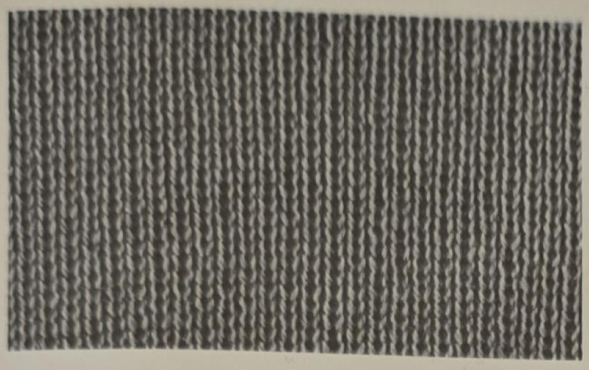
❶ NEEDLE ARRANGEMENT
CAST ON / MAIN KNITTING

Russel Levers

(Yarn) ..... Medium (Main Yarn Feeder)
(Tension Dial) 3
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER					RIBBER					DIRECTION	REMARKS
		CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.			
❷ CAST ON	1	STOCKINET		0			① ①		0	P	5	→	Start from the left side. (When the Knitter side is used.)
	2												
	3	SLIP		〃	〃		⓪ ①	〃	〃	〃	〃	⇄3	
❸ MAIN KNITTING	1	STOCKINET		2	〃		① ①	〃	2	〃	〃	→	To be repeated.
	2	〃	〃	〃	〃		〃	〃	〃	〃	〃	←	

3 DOUBLE RIB

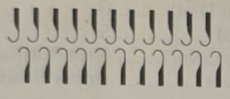


Every needle within the range of the desired width of the fabric performs the knitting action on both Knitter and Ribber. The structure of the fabric is practically identical to that of the K1, P1, Rib fabric.

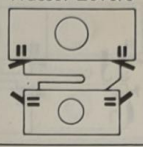
* The example here uses thinweight yarn.

❶ NEEDLE ARRANGEMENT

CAST ON / MAIN KNITTING



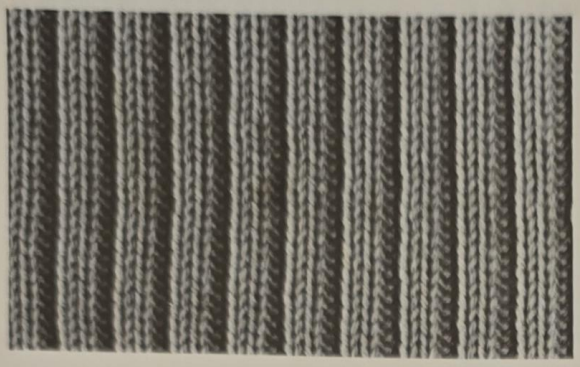
Russel Levers



(Yarn) ..... Thin (Main Yarn Feeder)
(Tension Dial) 5
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER					RIBBER						DIRECTION	REMARKS
		CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.				
❷ CAST ON	1	STOCKINET	▲ ▲	0	●		① ①		0	H	5		→	Start from the left side. (When the Knitter side is used.)
	2													
	3	SLIP	▲ ▲	〃	〃		⓪ ①	〃	〃	〃	〃		⇄3	
❸ MAIN KNITTING	1	STOCKINET	▲ ▲	〃	〃		① ①	〃	〃	〃	〃		→	To be repeated.
	2	〃	〃	〃	〃		〃	〃	〃	〃	〃		←	

4 KNIT 2 PURL 2 RIB



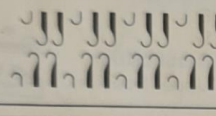
This is a ribbed fabric, with K2. P2. stitches alternating.

* There are two ways of arranging the working needles.
* Either of the methods can be used depending on the weight of yarn.
* Use the Needle Pusher on the 2/1 side for arranging needles.
* The sample demonstrated here uses medium weight yarn.

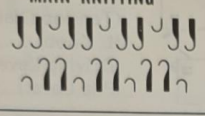
Method 1

❶ NEEDLE ARRANGEMENT

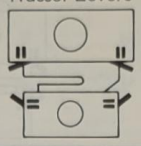
CAST ON



MAIN KNITTING



Russel Levers



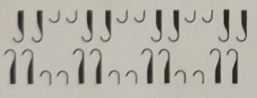
(Yarn) ..... Medium (Main Yarn Feeder)
(Tension Dial) 3
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER					RIBBER						DIRECTION	REMARKS
		CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.				
❷ CAST ON	1	STOCKINET		0					0	H	5		→	Start from the left side. (When the Knitter side is used.)
	2													
	3	SLIP		〃	〃				〃	〃	〃		3	
❸ MAIN KNITTING	1	STOCKINET		4	〃				4	〃	6		→	Change the needle arrangement for main knitting.
	2	〃	〃	〃	〃		〃	〃	〃	〃	〃		←	

Method 2

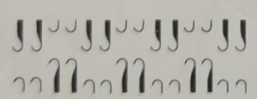
* This method is used for knitting with heavy yarn.
* Arrange needles and set the Swing Pointer and the Half Pitch Lever as instructed below.

CAST ON



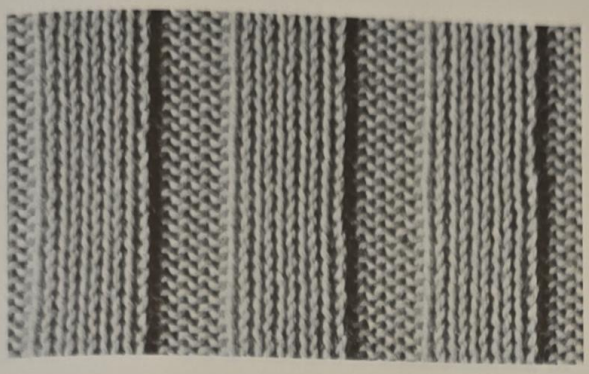
Swing Indicator ⎫
Half-Pitch Lever ⎭ ..... H — 5

MAIN KNITTING



Swing Indicator ⎫
Half-Pitch Lever ⎭ ..... P — 6

5 WIDE RIB



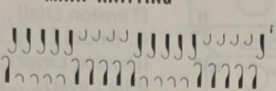
Ribbing using more than K3, P3.

* The sample here is made in K5, P5. The wide rib can be knitted in the same manner.
* The sample demonstrated here uses medium weight yarn.

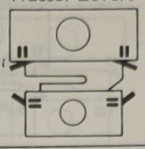
❶ NEEDLE ARRANGEMENT

CAST ON

MAIN KNITTING



Russel Levers

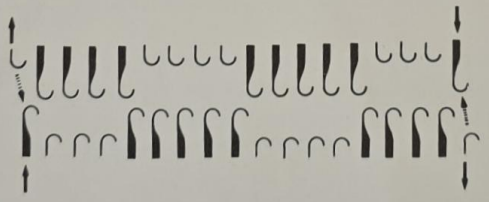


(Yarn) ..... Medium (Main Yarn Feeder)
(Tension Dial) 3
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

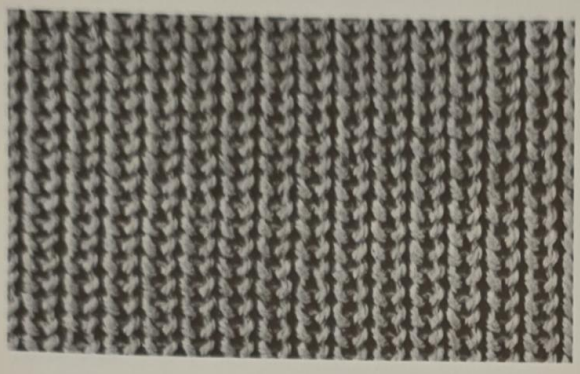
ORDER		KNITTER CAM LEV.	KNITTER SIDE LEV.	KNITTER STITCH DIAL	KNITTER STOP KNOB	KNITTER CARD MEM.	RIBBER SET LEV.	RIBBER PICK KNOB	RIBBER STITCH DIAL	RIBBER SWING IND. H-P LEV.	DIRECTION	REMARKS
❷ CAST ON	1	STOCKINET	▲ ▲	0	●		① ①	◢	0	H	5	→	Start from the left side. (When the Knitter side is used.)
	2											
	3	SLIP	▲ ▲	5	〃		⓪ ①	〃	7	〃	〃	⇄ 3	
	4	※											
❸ MAIN KNITTING	1	STOCKINET	▲ ▲	5	〃		① ①	〃	〃	〃	〃	→	
	2	〃	〃	〃	〃		〃	〃	〃	〃	〃	←	

※ Change the needle arrangement to the main knitting. Push back to A position all needles inactivated on both Beds. The stitches on the needles to be pushed back to A position will be transferred to the needles that remain in B position on the opposite Bed.

Note:* If more than two stitches are aligned on the Knitter or Ribber at the end of fabric, transfer the end stitch to the needle on the opposite Needle Bed.



6 ENGLISH RIB

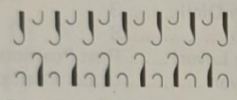


This stitch results from effecting the tucking on one side of the fabric made in K1, P1 rib or in double rib stitches.

* The sample shown here is knitted in K1, P1, rib using medium weight yarn.

❶ NEEDLE ARRANGEMENT

CAST ON / MAIN KNITTING

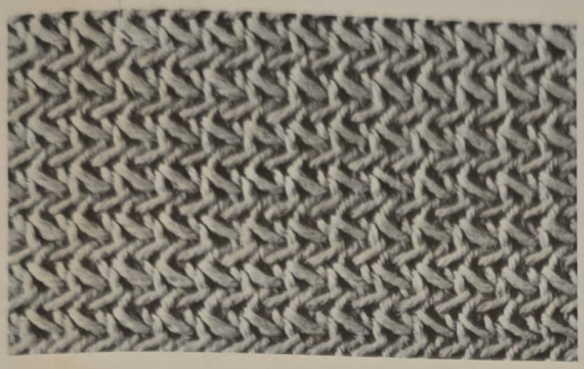


Russel Levers

(Yarn) ..... Medium (Main Yarn Feeder)
(Tension Dial) 3
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER					RIBBER						DIRECTION	REMARKS
		CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.				
❷ CAST ON	1	STOCKI-NET		0	●		① ①		0	P	5		←	Start from the right side. (When the Ribber side is used.)
	2													
	3	SLIP	▲	0	〃		⓪ ①	〃	2	〃	〃		⇄3	
❸ MAIN KNITTING	1	TUCK	〃	4	〃		① ①	〃	4	〃	〃		←	
	2	〃	〃	〃	〃		〃	〃	〃	〃	〃		→	

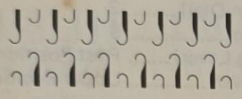
7 SWUNG ENGLISH RIB



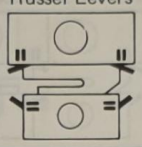
A K1, P1, rib with a 2-pitch swing or a double rib with 1-pitch swing gives you this ribbed fabric, provided that one side is "tucked".

* The sample is knitted in K1, P1, rib using medium weight yarn.

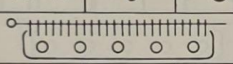
❶ NEEDLE ARRANGEMENT
CAST ON / MAIN KNITTING



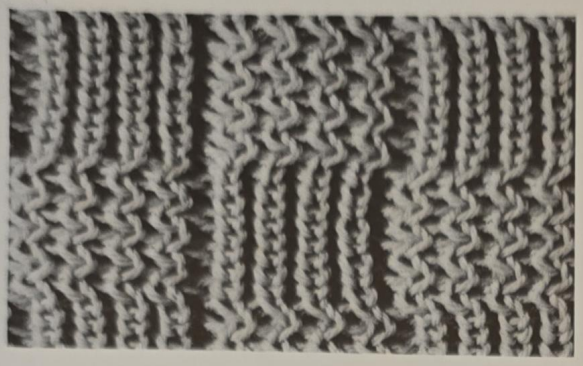
Russel Levers



(Yarn) ..... Medium (Main Yarn Feeder)
(Tension Dial) 3
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER					RIBBER						DIRECTION	REMARKS
		CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.				
❷ CAST ON	1	STOCKINET	▲ ▲	0	●		① ①		0	P	5	←	Start from the right side. (When the Ribber side is used.)
	2													
	3	SLIP	▲ ▲	0	〃		⓪ ①	〃	2	〃	〃	⇄3		
❸ MAIN KNITTING	1	TUCK	〃	4	〃		① ①	〃	4	〃	5	←		
	2	〃	〃	〃	〃		〃	〃	〃	〃	〃	→		
	3	〃	〃	〃	〃		〃	〃	〃	〃	7	←		
	4	〃	〃	〃	〃		〃	〃	〃	〃		→		

8 VARIATION OF ENGLISH RIB

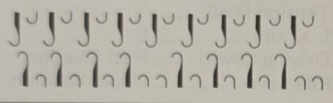


This is a knitted fabric in English rib and swung English rib at the same time according to the needle arrangment condition.

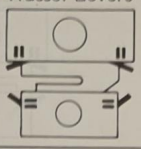
* The sample is knitted using medium weight yarn.

❶ NEEDLE ARRANGEMENT

CAST ON / MAIN KNITTING



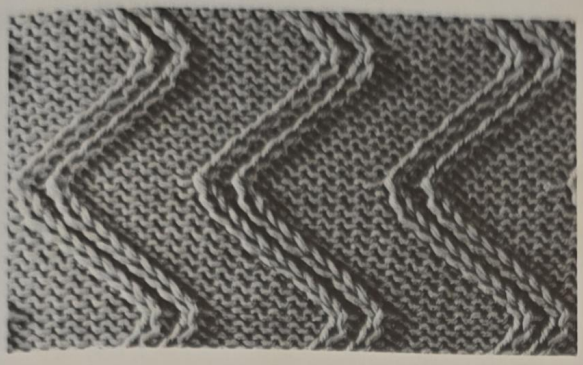
Russel Levers



(Yarn) ..... Medium (Main Yarn Feeder)
(Tension Dial) 3
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER					RIBBER					DIRECTION	REMARKS
		CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.			
❷ CAST ON	1	STOCKI-NET		0	●		① ①		0	H	5	←	Start from the right side. (When the Ribber side is used.)
	2												
	3	SLIP	▲	0	〃		⓪ ①	〃	2	〃	〃	⇉3	
❸ MAIN KNITTING	1	TUCK	〃	4	〃		① ①	〃	4	〃	5	←	Repeat 4 times. Knit 16 rows.
	2	〃	〃	〃	〃		〃	〃	〃	〃	〃	→	
	3	〃	〃	〃	〃		〃	〃	〃	〃	6	←	
	4	〃	〃	〃	〃		〃	〃	〃	〃	〃	→	
	5	〃	〃	〃	〃		〃	〃	〃	〃	7	←	Repeat 4 times. Knit 16 rows.
	6	〃	〃	〃	〃		〃	〃	〃	〃	〃	→	
	7	〃	〃	〃	〃		〃	〃	〃	〃	6	←	
	8	〃	〃	〃	〃		〃	〃	〃	〃	〃	→	

9 VARIATION SWING

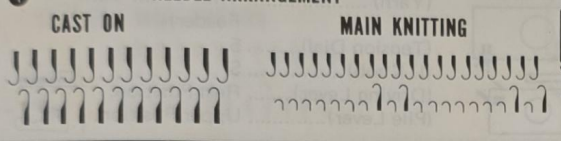


While the Knitter Carriage knits in stockinet, the Ribber Carriage knit with selected needles making ridges. By swinging the Ribber, these ridges make various swung patterns.

* The sample is knitted using medium yarn.

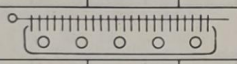
❶ NEEDLE ARRANGEMENT

CAST ON MAIN KNITTING



Russel Levers

(Yarn) ..... Medium (Main Yarn Feeder)
(Tension Dial) 3
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

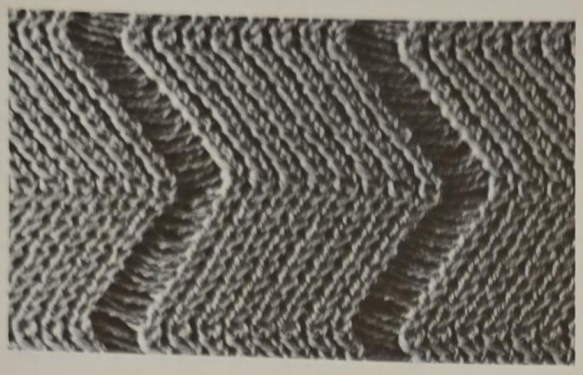
ORDER		KNITTER CAM LEV.	KNITTER SIDE LEV.	KNITTER STITCH DIAL	KNITTER STOP KNOB	KNITTER CARD MEM.	RIBBER SET LEV.	RIBBER PICK KNOB	RIBBER STITCH DIAL	RIBBER SWING IND. H-P LEV.	DIRECTION	REMARKS
❷ CAST ON	1	STOCKINET	■ ■	0	●		① ①	◢	0	H	5	←	Start from the right side. (When the Ribber side is used.)
	2											
	3	SLIP	▲ ■	2	〃		⓪ ①	〃	4	〃	〃	⇄3	
	4	Except for the 8, 10, 18, 20, etc. needles on the Ribber from the left end, transfer the stitches of other needles onto the Knitter needles. Then push these vacant needles back to A position.											
❸ MAIN KNITTING	1	STOCKINET	■ ■	5	〃		① ①	〃	3	〃	5	←⟆	Knit swinging the Ribber one by one pitch every row to make a zigzag pattern and pushing 1–5 both end needles to D position.
	6	〃	〃	〃	〃		〃	〃	〃	〃	0	→⟆	
	11	〃	〃	〃	〃		〃	〃	〃	〃	5	←⟆	
	16	〃	〃	〃	〃		〃	〃	〃	〃	10	→⟆	
	20		〃	〃	〃		〃	〃	〃	〃	6	→	

Note: * If stitches tend to float, use the P Carriage and knit pushing the Knitter needles to C position every row. (Refer to page 56.)

* As the Ribber is continuously swung to either side, the Ribber end needles may finally go to a position where there is no opposite needle on the Knitter. Just before this situation occurs, transfer the stitches on the Ribber end needles to the opposite Knitter needles and push the empty needles into A position. These needles are to be advanced to B position when the Ribber is sufficiently swung back. And, just start knitting again.

* After the closed edge cast on is completed, you may make several rows of tubular stitches before changing the needle arrangement to swing the Needle Bed. This manner of making initial rows will give a firmer fabric edge.

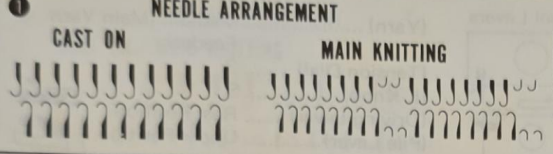
10 HERRING BONE SWING

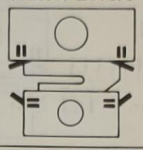


This is a combination of tucking and swing. Swing the Ribber 2 pitches for K1, P1, rib and 1 pitch for double rib, and tuck one row on the Ribber before you swing it back. Repeat and swing back and forth for the desired number of rows, then change the direction of the swing.

* The sample is knitted in herring bone using a thin yarn, a variation of double rib.

❶ NEEDLE ARRANGEMENT



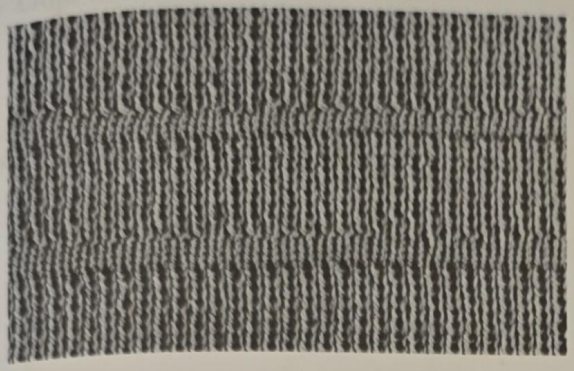


(Yarn) ..... Thin (Main Yarn Feeder)
(Tension Dial) 5
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER CAM LEV.	KNITTER SIDE LEV.	KNITTER STITCH DIAL	KNITTER STOP KNOB	KNITTER CARD MEM.	RIBBER SET LEV.	RIBBER PICK KNOB	RIBBER STITCH DIAL	RIBBER SWING IND. H-P LEV.		DIRECTION	REMARKS
❷ CAST ON	1	STOCKINET		0	●		① ①		0	H	5	←	Start from the right side. (When the Ribber side is used.)
	2												
	3	SLIP	▲	0	〃		⓪ ①	〃	2	〃	〃	→3	
	4	※											
❸ MAIN KNITTING	1	TUCK	〃	2	〃		① ①	〃	〃	〃	〃	←	Repeat 10 times. (knit 20 rows.)
	2	〃	〃	〃	〃		〃	〃	〃	〃	6	→	
	3	〃	〃	〃	〃		〃	〃	〃	〃	〃	←	Repeat 10 times. (knit 20 rows.)
	4	〃	〃	〃	〃		〃	〃	〃	〃	5	→	

※ Change to the main knitting needle arrangement. Skip two adjacent needles at intervals of 8 needles on the Knitter and the Ribber. Transfer the stitch on each needle to be skipped to the adjacent needle. Push the emty needles to A position.

11 PIN TUCK

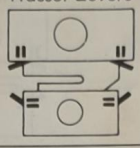


While continuing a rib knitting operation, make 3 or 4 extra rows with the Ribber only, and repeat this at regular intervals.

* The sample is knitted using thin yarn and by repeating the extra row knitting in the double rib operation.

❶ NEEDLE ARRANGEMENT
CAST ON / MAIN KNITTING

Russel Levers



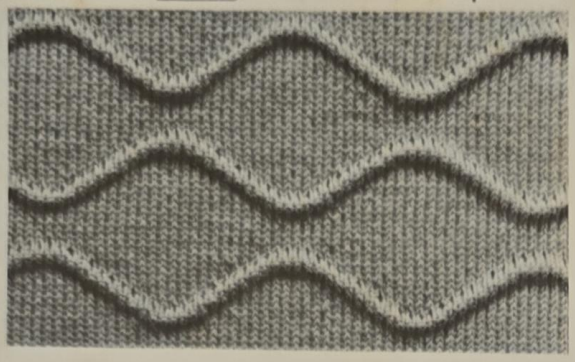
(Yarn) ..... Thin (Main Yarn Feeder)
(Tension Dial) 5
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER					RIBBER					DIREC-TION	REMARKS
		CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.			
❷ CAST ON	1	STOCKI-NET		0			① ①		0	H	5	←	Start from the right side. (When the Ribber side is used.)
	2												
	3	SLIP		〃	〃		⓪ ①	〃	2	〃	〃	)3	
❸ MAIN KNITTING	1	〃		2	〃		① ①	〃	3	〃	〃	)10	Double rib.
	2	〃	〃	〃	〃		〃	〃	〃	〃	〃		
	3	〃		〃	〃		〃	〃	〃	〃	〃	)4	Extra pin tuck part.
	4	〃	〃	〃	〃		〃	〃	〃	〃	〃		
	5	Suspend the Edge Weights.											

Note:* If stitches tend to float, knit using the P Carriage. (Refer to page 56.)

12 PUNCH PIN TUCK

CARD No.9 R-2 –A **Punch pin tuck**



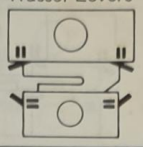
This is a variation of pin-tuck using Punch Cards. Different from the ordinary pin-tuck knitting, curves and zigzag patterns can be knitted through brief operations.

* This knitting, fabric has a feeling of firm thickness and is suitable for knitting outer garments.
* The sample shown here uses light yarn.

❶ NEEDLE ARRANGEMENT

CAST ON / MAIN KNITTING

Russel Levers

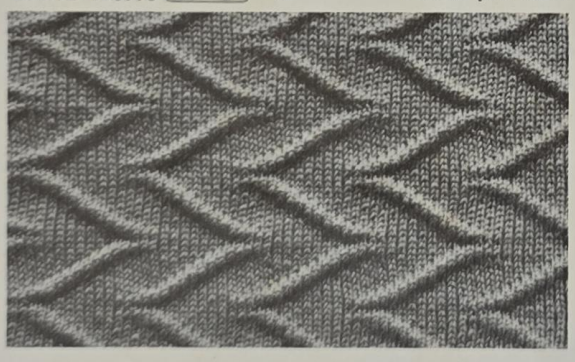


(Yarn) ..... Light (Main Yarn Feeder)
(Tension Dial) 4
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER					RIBBER						DIRECTION	REMARKS
		CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.				
❷ CAST ON	1	STOCKI-NET	▲ ▲	0	●		① ①		0	H	5		←	Start from the right side. (When the Ribber side is used.)
	2													
	3	SLIP	▲ ▲	1	〃		⓪ ①	〃	3	〃	〃		⇄3	
	4	〃	▲ ▲	3	〃	Insert Card	① ①	〃	4	〃	〃		←	
❸ MAIN KNITTING	1	〃	〃	〃	▼	1	〃	〃	〃	〃	〃		→	
	2	〃	〃	〃	〃	2	〃	〃	〃	〃	〃		←	

Always ~~place~~ teeth of comb between gateposts

CARD No.10 R-2 –A **Punch pin tuck**



13 PUNCH TUCK RIB

CARD No.10–A

Punch tuck rib

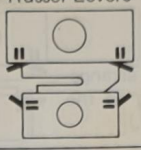
This is a combination of the Punch Card tucking on the Knitter and double rib on the Ribber.

* The Punch Cards No.2, 4, 7, 9, 10, and 12 of the 20 Punch Cards supplied with the Knitter are suitable for tuck ribbing patterns.
* The sample is knitted using light yarn.

❶ NEEDLE ARRANGEMENT

CAST ON / MAIN KNITTING

Russel Levers



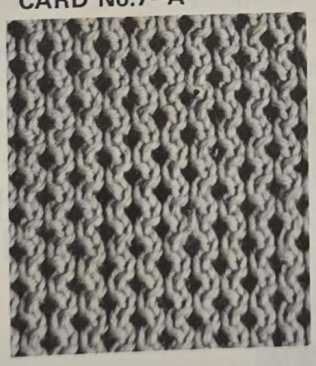
(Yarn) ..... Light (Main Yarn Feeder)
(Tension Dial) 4
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER CAM LEV.	KNITTER SIDE LEV.	KNITTER STITCH DIAL	KNITTER STOP KNOB	KNITTER CARD MEM.	RIBBER SET LEV.	RIBBER PICK KNOB	RIBBER STITCH DIAL	RIBBER SWING IND. H-P LEV.	DIRECTION	REMARKS
❷ CAST ON	1	STOCKINET		0					0	H	5	←	Start from the right side. (When the Ribber side is used.)
	2											
	3	SLIP		1	〃			〃	3	〃	〃	→3
	4	〃		3	〃	Insert Card		〃	〃	〃	〃	←
❸ MAIN KNITTING	1	TUCK	〃	〃		1	〃	〃	〃	〃	〃	→	
	2	〃	〃	〃	〃	2	〃	〃	〃	〃	〃	←	

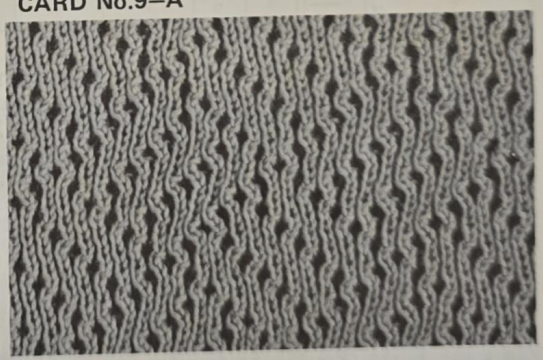
ALWAYS centre teeth of comb between gateposts.

CARD No.2–A

CARD No.7–A



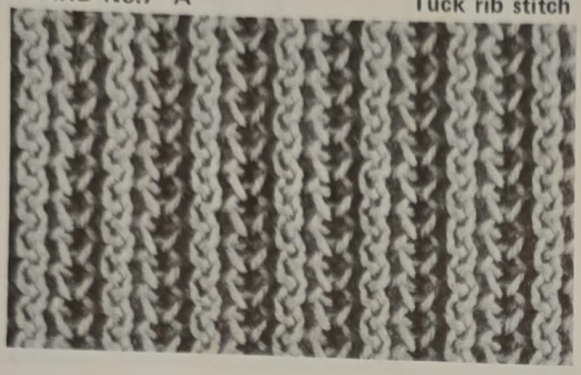
CARD No.9–A



14 TUCK RIB STITCH

CARD No.7–A

Tuck rib stitch

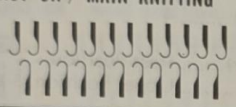


Knit in tuck stitch using the Punch Cards on the Knitter and arranging needles according to the pattern on the Ribber.

* Use the Punch Cards for tuck knitting supplied together with the Knitter.
* The sample is knitted using light yarn. Needle arrangement for the Card No.7.

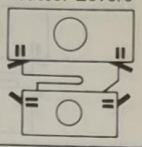
❶ NEEDLE ARRANGEMENT

CAST ON / MAIN KNITTING

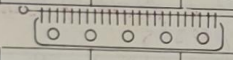


(Change needle arrangement according to the kind of pattern.)

Russel Levers



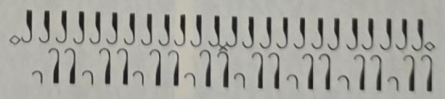
(Yarn) ..... Light (Main Yarn Feeder)
(Tension Dial) 4
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	RIBBER SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.	DIRECTION	REMARKS
❷ CAST ON	1	STOCKINET		0	●		① ①		0	H 5	←	Start from the right side. (When the Ribber side is used.)
	2											
	3	SLIP	▲	1	〃		⓪ ①	〃	3	〃 〃	⇉3	
	4	Change the needle arrangement to main knitting.										
	5	〃	▲ ▲	3	〃	Insert Card	① ①	〃	2	〃 〃	←	
❸ MAIN KNITTING	1	TUCK	〃	〃	▼	1	〃	〃	〃	〃 〃	→	
	2	〃	〃	〃	〃	2	〃	〃	〃	〃 〃	←	

CARD No.10–A

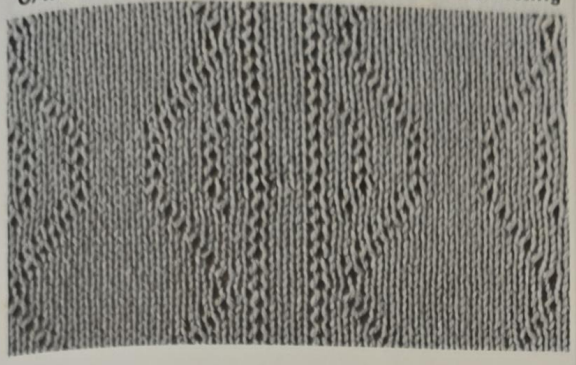
Tuck rib stitch

The needle arrangement for the Card No.10–A.



15 DRIVE LACE KNITTING

CARD No.1 R-2 —A **Drive lace knitting**

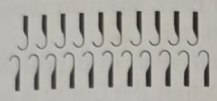


This type of knitting is also unique. In this drive lace knitting, knit in stockinet on the Ribber and partially knit on the Knitter with the Punch Card removing loops every two rows.

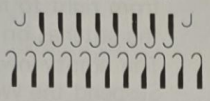
* Light yarn is suitable for this type of knitting.
* It is effective to knit cardigans, blouses, etc. using light weight yarn or synthetic yarn.
* The sample is knitted using light yarn.

❶ **NEEDLE ARRANGEMENT**

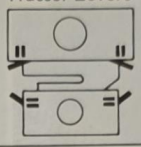
CAST ON



MAIN KNITTING

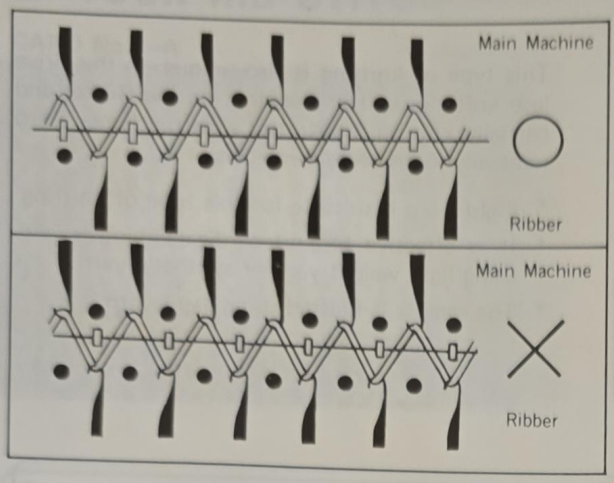


Russel Levers



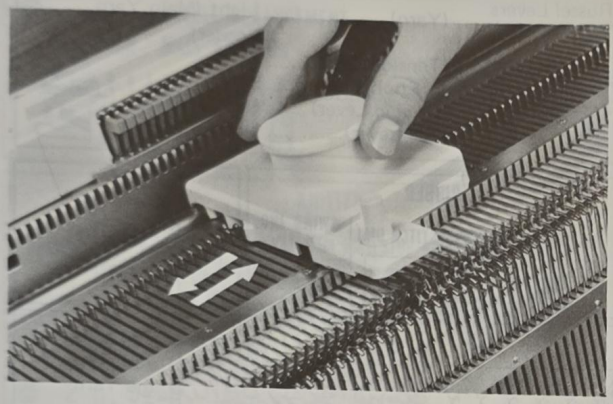
(Yarn) ..... Light (Main Yarn Feeder)
(Tension Dial) 4
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER CAM LEV.	KNITTER SIDE LEV.	KNITTER STITCH DIAL	KNITTER STOP KNOB	KNITTER CARD MEM.	RIBBER SET LEV.	RIBBER PICK KNOB	RIBBER STITCH DIAL	RIBBER SWING IND. H-P LEV.	DIRECTION	REMARKS
❷ CAST ON	1	STOCKINET		5			① ①		3	H	5	←	Thread waste yarn through the Yarn Feeder.
	2												
	3	Remove stitches on the Knitter with the P Carriage.											
	4	SLIP	〃	〃	〃		〃	〃	〃	〃	〃	→3	Waste knitting.
	5	〃	〃	〃	〃		〃	〃	〃	〃	〃	←2	Main yarn (Light yarn)
	6	〃	〃	〃	〃	Insert Card	〃	〃	〃	〃	〃	←	
	7	Push both end needles on the Knitter to A position.											
❸ MAIN KNITTING	1	Push up the Ribber needles to C position.											
	2	〃	▲	〃	▼	1	〃	〃	〃	〃	〃	→	
	3	Push up the Ribber needles to C position.											
	4	〃	〃	〃	〃	2	〃	〃	〃	〃	〃	←	
	5	Remove stitches on the Knitter.											



(Cast on)

(1) Arrange needles as in double rib and set the Knitter and the Ribber as shown in Order ❶ and in line 1 of Order ❷. Set the Stitch Dial same as main knitting and knit one row with waste yarn. Insert the Cast on Comb between the Sinker Posts of the Ribber as shown left.

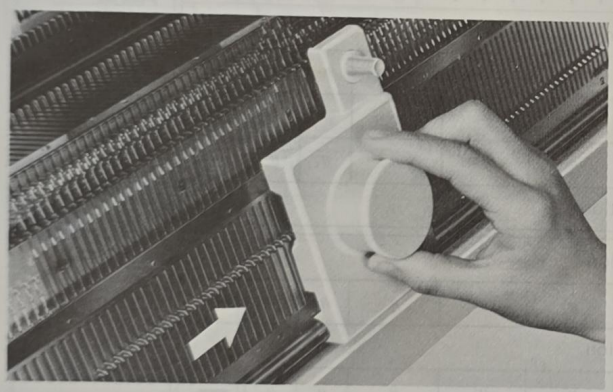


(2) Move the P Carriage (without the P Presser) from right to left and back again to remove the stitches on the Knitter.
The empty needles will align in B position. Suspend the Weight so that the Comb is well balanced.

(3) Set the Cam Lever on the Knitter to SLIP and knit three rows using waste yarn.

(4) Change the waste yarn to the main yarn in the Yarn Feeder and knit two rows.

(5) Insert the Punch Card in the Pattern Panel and with the Stop knob at ● mark knit one row.



(Main knitting)

(1) Push the needles on the Ribber to C position using the P Carriage. (Refer to page 12.)

(2) As in line 2 of Order ❷, set the Knitter and the Ribber and knit one row from left to right. (The Ribber needles will knit and on the Knitter only the needles selected will knit.)

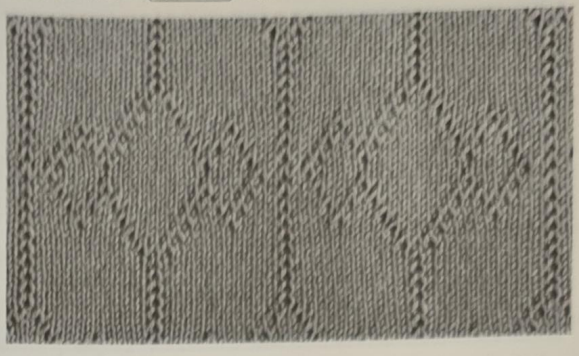
(3) Push the Ribber needles to C position using the P Carriage.

(4) Knit one row from right to left. (Only the Ribber side knits.)

(5) Move the P Carriage from right to left to remove the stitches on the Knitter. Repeat the above procedures (1)–(5).

CARD No.2 [R - 2] –A Drive lace knitting

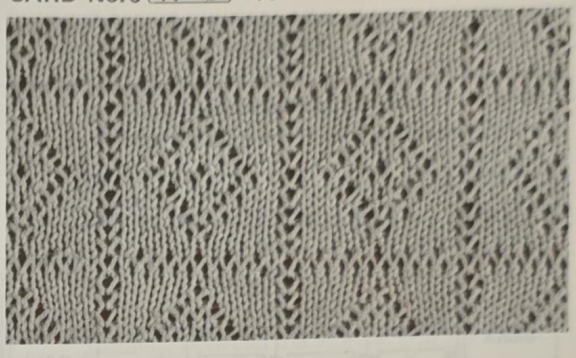
CARD No.3 [R - 2] –A Drive lace knitting



CARD No.4 [R - 2] –A

CARD No.5 [R - 2] –A

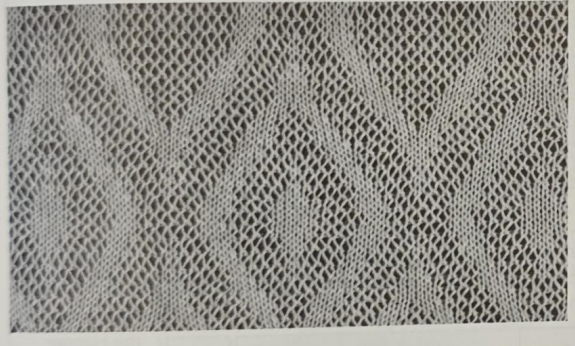
CARD No.6 [R - 2] –A Drive lace knitting



MESH KNITTING:

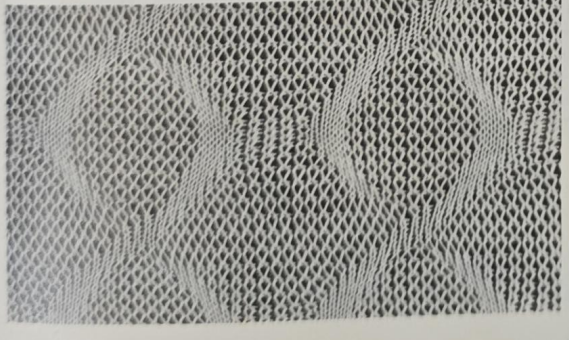
This mesh-like knitting is worked in the same manner as done for drive lace knitting using summer yarn. These knitted fabrics are suitable for cardigans, beach wear, or cushion covers.

CARD No.7 [R - 2] –A Mesh knitting

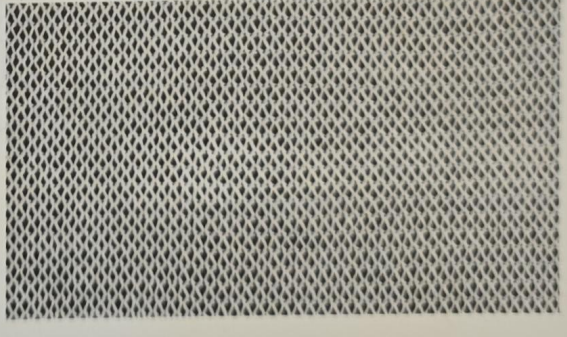


* Knit with the same Stitch Dial number as used for drive lace using thin yarn.
* Card No.9 [R–2] No.10 [R–2] can be used for mesh knitting.
* When ironing, slightly press it against the fabric in vertical direction.

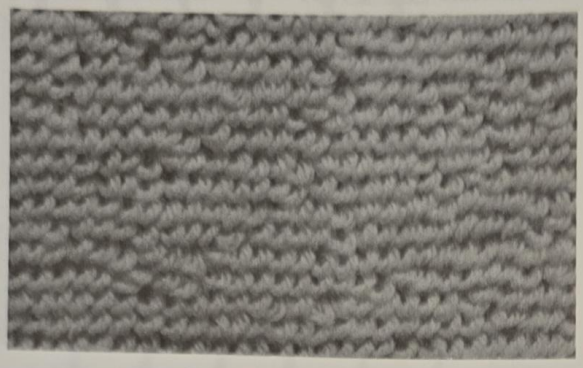
CARD No.8 [R - 2] –A Mesh knitting



Mesh knitting without using the Punch Card.



16 PILE KNITTING

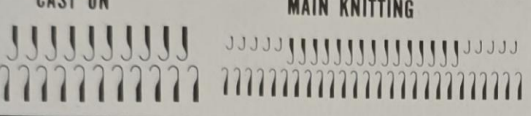


This is an unique pattern peculiar to your knitting machine. The stitches are formed using both ground yarn and pile yarn. Knit every 2 rows using pile yarn only on the Knitter and every row using both yarns on the Ribber removing the stitches knitted by the Knitter.

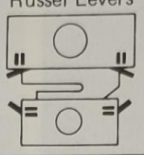
* This knitted fabric is suitable for suits, coat and carpets for interior decoration. Besides, this fabric gives effect for collars, cuffs of coat, etc.
* The sample is knitted using wooly-nylon yarn (ground yarn) and light yarn (pile yarn).

❶ NEEDLE ARRANGEMENT

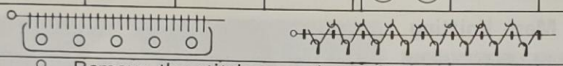
CAST ON — MAIN KNITTING

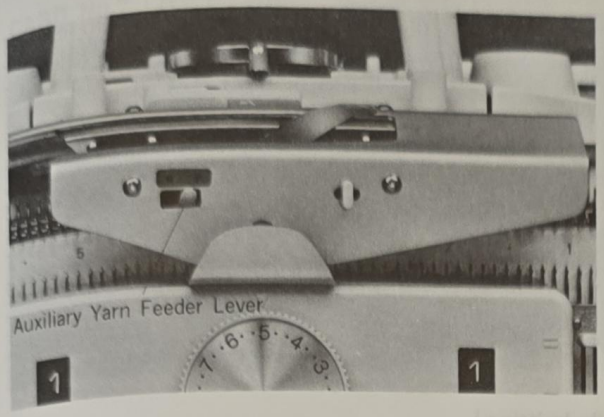


Russel Levers



(Yarn) ..... Light yarn (Main Yarn Feeder) Wooly-nylon (Auxiliary Yarn Feeder)
(Tension Dial) 4–7
(L Knob) ..... S
(Driving Lever) ..... Rest Position.
(Pile Lever) ..... Upper Position.

ORDER		KNITTER: CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	RIBBER: SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.	DIREC-TION	REMARKS
❷ (1) CAST ON	1	STOCKI-NET	■ ■	6	●		① ①	◢	4	H	5	←	
	2												
	3	Remove the stitches on the Knitter by using the P Carriage and suspend the Weights.											
	4	SLIP	〃	〃	〃		〃	〃	〃	〃	〃	⇉3	Waste knitting.
	5	〃	〃	〃	〃		〃	〃	〃	〃	〃	⇄2	Knit with pile yarn (Light yarn)
	6	Set the Auxiliary Yarn Feeder Lever to P and thread the ground yarn (wooly-nylon). Depress the Pile Lever. (Refer to page 11).											
	7	〃	〃	〃	〃		〃	〃	〃	〃	〃	←	
	8	Push five needles of the Knitter on both sides to A position.											
❸ MAIN KNITTING	1	→ Push up the Ribber needles to C position.											Knit moving the Hanger Combs every ten rows upwards.
	2	〃	■ ▲	〃	〃		〃	〃	〃	〃	〃	→	
	3	→ Push up the Ribber needles to C position.											
	4	〃	〃	〃	〃		〃	〃	〃	〃	〃	←	
	5	Remove the stitches on the Knitter.											



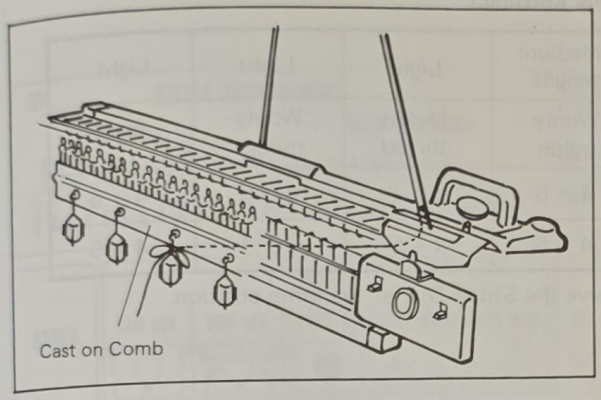
(Cast on)

(1) Cast on procedures in lines 1–5 are same as those of drive lace knitting. (Refer to pages 36–38.)

(2) Knit two rows using pile yarn and move the Carriage to the right end.

(3) Set the Auxiliary Yarn Feeder Lever to P (right), and depress the Drop Levers to the middle position.

(4) Thread the ground yarn through the Auto-Tension and the Yarn Feeder. (Refer to page 11.)

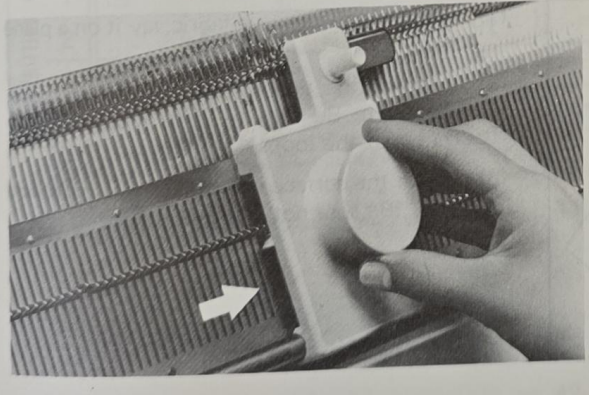


(5) Put in the yarn end between the Knitter and the Ribber Needle Bed and guide it so that it goes behind the Cast on Comb and tie it to the Weight Hook on the right of centre. Restore the Ribber to the upper position and connect the Ribber Carriage with the Knitter Carriage. (Make sure that the threaded ground yarn is not caught between the Ribber Stopper and the Auxiliary Piece on the front edge or is not entangled with the Sinker Post.)

(6) Depress the Pile Levers (blue) to broaden the distance between the Knitter and the Ribber. (Refer to page 10.)

(7) Push 5–6 needles on the Knitter back to A position at both ends. (Providing there is no pile section on either end so as to make it easier to seam the garment.)

* If the yarns, pile yarn and ground yarn, get entangled with each other or loosened pull the yarns slightly above the Yarn Feeder before moving the Carriage.



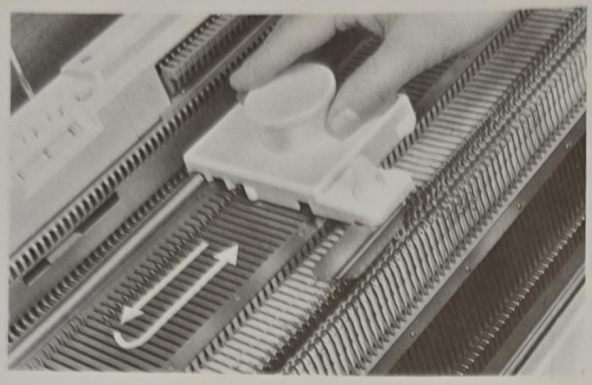
(Main knitting)

(1) Push up the Ribber needles to C position by moving the P Carriage. (Refer to page 12.)

(2) Set the Knitter and the Ribber Carriages as in line 2 of Order ❸ and knit one row from left to right. (On the Ribber side the pile and ground yarns are knitted on all the needles and on the Knitter side, the pile yarn is knitted on the selected needles only.)

(3) Push up the Ribber needles to C position by moving the P Carriage.

(4) Move the Carriage from right to left to knit one row. (The Ribber side is to be knitted.)



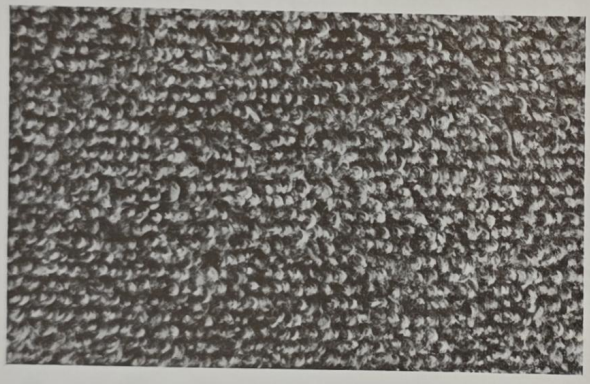
(5) Move the P Carriage from right to left and back removing the stitches on the Knitter. Repeat the procedures (1)–(5).

(Stitch Dial numbers for pile knitting and punch pile knitting.)

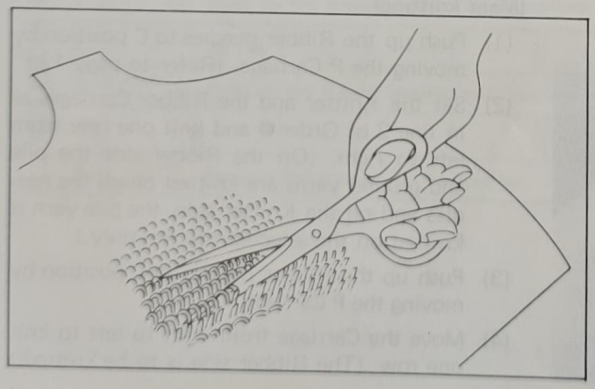
Knitting thread						
Pile yarn		Medium weight	Medium weight	Light	Light	Light
Ground yarn		Nylon thread	Wooly-nylon	Nylon thread	Wooly-nylon	Thin
Knitter		4 – 6	4 – 6	4 – 6	4 – 6	4 – 6
Ribber		4 – 5	4 – 5	4 – 5	3 – 4	4 – 5

* In both cases of casting-on and main knitting, leave the Stitch Dial at the same position.

＊Make cut-pile fabric＊



This type of fabric is made by cutting the loops of knitted pile fabric, so it gives a velvet or carpet effect.



(1) Spreading the knitted fabric, lay it on a plane stand.

(2) Inserting the tip of scissors into the loops, cut them. Be sure to cut, if possible, the center of the loops.

(3) Steam the surface of the fabric with a steam iron. (Be sure not to press it down.)

17 PUNCH PILE KNITTING

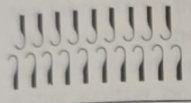
CARD No.7 R-2 —A Punch Pile knitting

This type of knitting is the unique feature peculiar to your Knitter. These patterns are composed of the piled and unpiled portions formed using the Punch Cards.

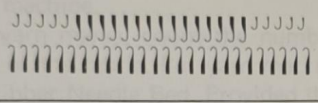
* This knitted fabric is used for carpets, and also, for outer garments depending on the kind of materials.
* The sample shown here uses wool-nylon yarn and light yarn.
* Except for the use of Punch Cards, operate in the same manner as for the ordinary pile knitting.

❶ NEEDLE ARRANGEMENT

CAST ON

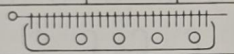
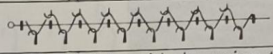


MAIN KNITTING



Russel Levers

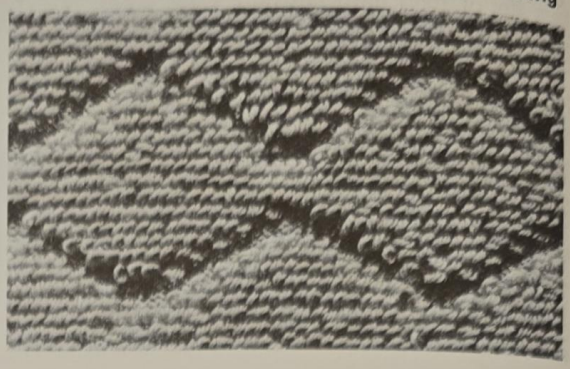
(Yarn) ..... Light yarn (Main Yarn Feeder) Wooly-nylon (Auxiliary Yarn Feeder)
(Tension Dial)..... 4–7
(L Knob)..... S
(Driving Lever)..... Rest Position.
(Pile Lever)..... Upper Position.

ORDER		KNITTER: CAM LEV.	SIDE LEV.	STITCH DIAL	STOP KNOB	CARD MEM.	RIBBER: SET LEV.	PICK KNOB	STITCH DIAL	SWING IND. H-P LEV.	DIREC-TION	REMARKS
❷ CAST ON	1	STOCKI-NET		6	●		ⓘ ⓘ		4	H	5	←	
	2												
	3	Remove the stitches on the Knitter side by using the P Carriage and suspend the Weights.											
	4	SLIP	〃	〃	〃		〃	〃	〃	〃	〃	)3	Waste knitting.
	5	〃	〃	〃	〃		〃	〃	〃	〃	〃	)2	Knit with pile yarn. (Light yarn.)
	6	Set the Auxiliary Yarn Feeder Lever to P and thread ground yarn (wooly-nylon). (Refer to page 11.)											
	7	〃	〃	〃	〃	Insert Card	〃	〃	〃	〃	〃	←	
	8	Push back five needles on both ends of the Knitter to A position.											
❸ MAIN KNITTING	1	Push needles on the Ribber to C position.											
	2	〃	■ ▲	〃	〃	1	〃	〃	〃	〃	〃	→	
	3	Push needles on the Ribber to C position.											
	4	〃	〃	〃	〃	2	〃	〃	〃	〃	〃	←	
	5	Remove the stitches on the Knitter.											

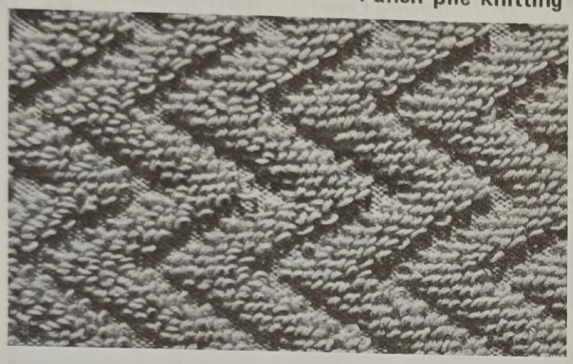
* Cut the loops of fabric to make it cut-pile finish.

CARD No.8 R - 2 —A Punch pile knitting

CARD No.9 R - 2 —A Punch pile knitting

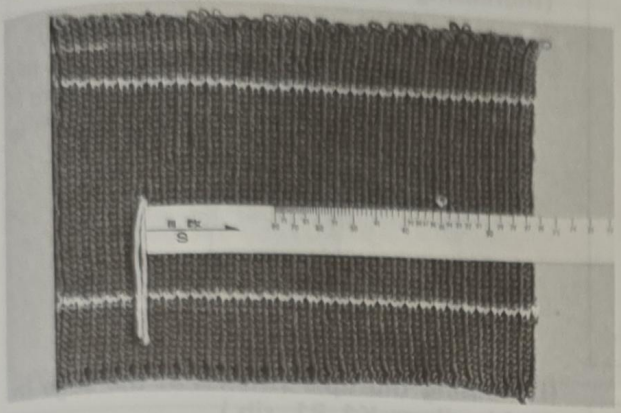


CARD No.10 R - 2 —A Punch pile knitting



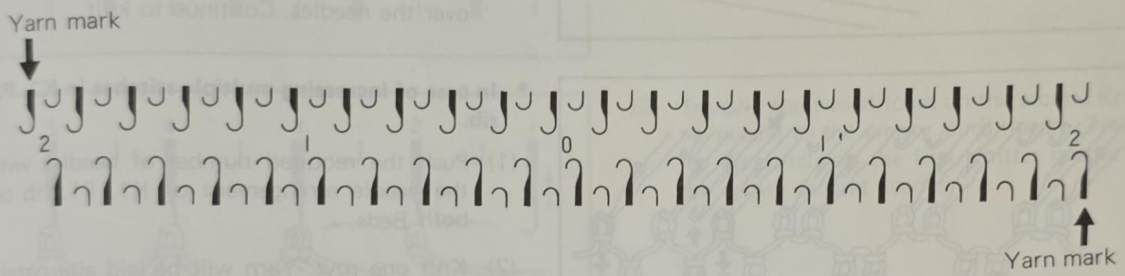
5. BASIC TECHNIQUE FOR KNITTING ON THE RIBBER

＊Tension gauge＊

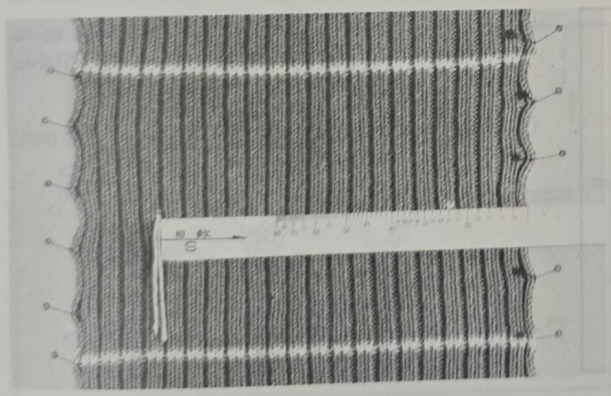


Take the tension gauge using the Gauge Scale. The procedure is as explained in the Knitter Instruction Book. However, when the Ribber is used, stitches are knitted on both Knitter and Ribber, and in many cases, not all the needles within the range of fabric are used. Therefore, when taking tension gauge note the following instructions.

* Regardless of kind of needle arrangement, always push up needles within the range of 35th needles on both sides of 0 on both Needle Beds and make some trial knitting. Knit the required number of rows following the Row Counter. Knit 20 rows, knit 2 rows with a contrast colour yarn, knit 60 rows with the main yarn, (Put yarn marks at the 30th row.), knit 2 rows with the contrast colour yarn, and knit 20 rows. Remove the fabric from the machine.
* When putting the yarn marks, count the number of needles on the Needle Bed instead of counting the number of stitches of the fabric. Put yarn marks on the stitches on the 21st needles on both sides of 0 on either Knitter or Ribber Needle Bed. Provided that the 21st needle is rested in A position, put a yarn mark on the opposite 21st needle that is on either the Knitter or the Ribber.
* Measure the number of stitches between the yarn marks as done in the Knitter Instruction Book.



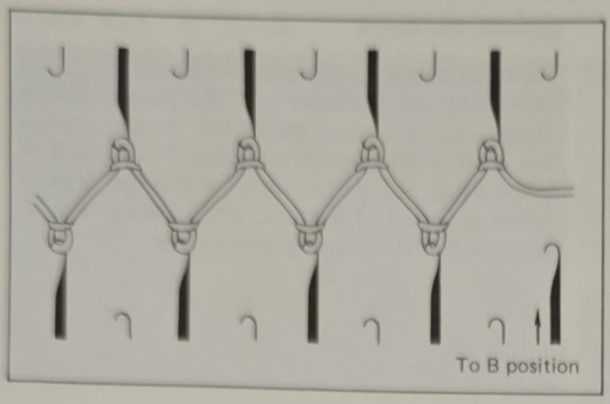
* Measure the tension gauge in the same manner as for measuring the tension gauge knitted on the Knitter.
* When knitting a garment based on the tension gauge taken in the foregoing procedure, arrange the needles by reading the needle number markings on the Needle Beds. If the width of 50 needles is required, arrange needles according to type of knitting within the width of 50 needles.



(In case of taking gauge by stretching fabric.)

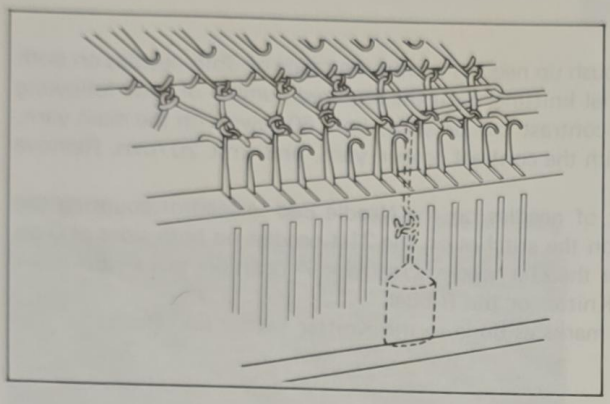
When taking gauge for knitting in K1. P1. rib or K2. P2. rib, stretch it in a horizontal direction considering the conditions to be worn as clothing, and pin it on a sheet of paper. Then take gauge with the Gauge Scale.

* Increase stitch *



(Increasing single stitch at the edge.)

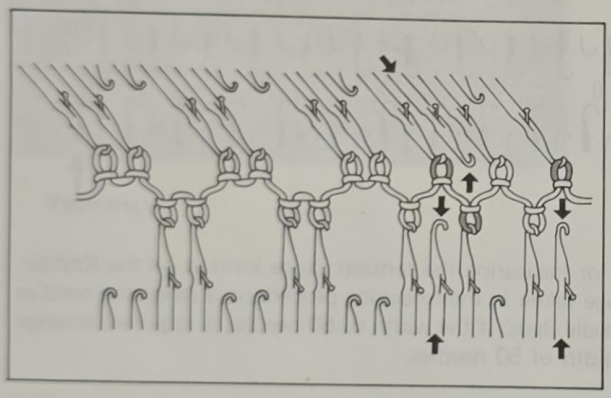
* Stitch is increased on the Carriage side only.
* On the Carriage side, push one needle on the Ribber (or on the Knitter) to be increased to B position, and continue to knit. One stitch is increased on the row.



(Increasing multiple stitches at the edge in double rib or K1. P1. rib.)

* **Stitches are increased on the side opposite the Carriage.**

(1) Push the required number of needles on both Beds according to the needle arrangement for double rib or K1. P1. rib.
(2) Knit one row. Yarn will be laid alternately on the two rows of needles in service in a zigzagging pattern.
(3) Suspend the Edge Weight on the yarn laying over the needles. Continue to knit.



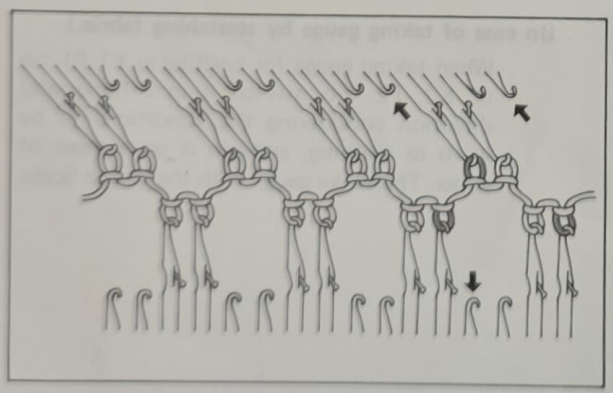
* **In case of increasing multiple stitches in K2. P2. rib.**

(1) Push the required number of needles with the needle arrangement of K1. P1. rib on both Beds.

(2) Knit one row. Yarn will be laid alternately on the two rows of needles as for K1.P1. rib.

(3) Suspend an Edge Weight on the yarn laying over the needles.

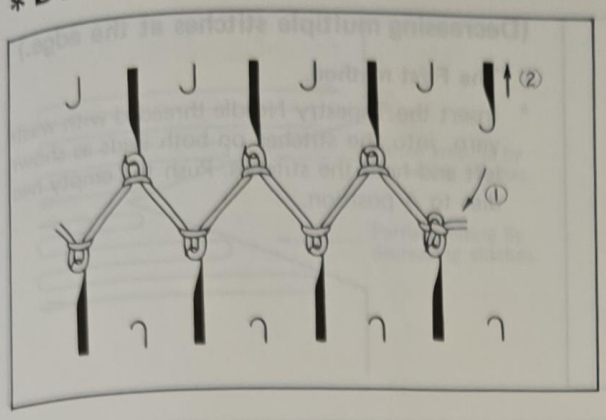
(4) Knit one row.



(5) Change the arrangement of the needles to that of K2. P2. rib by transferring stitches to opposite needles.

(6) Push back the empty needles to A position. Continue to knit.

* Decrease stitch *

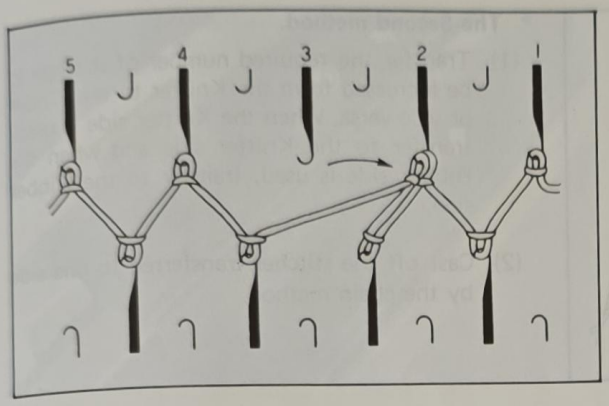


(Decrease one or two stitches at the end.)

* **The first method.**

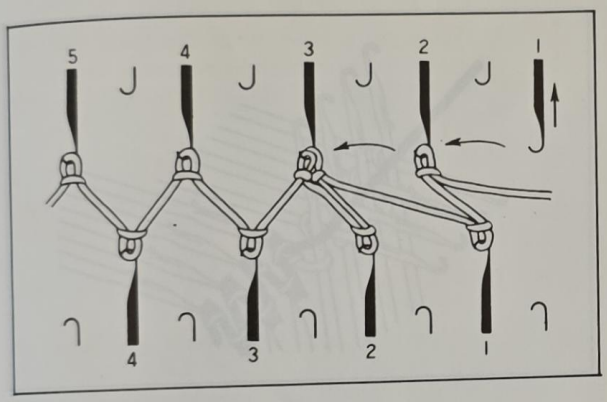
(1) Using the Transfer Tool, decrease the end stitch to the next working needle (from the Knitter to the Ribber, or vice versa.)

(2) Push the empty needle to A position.

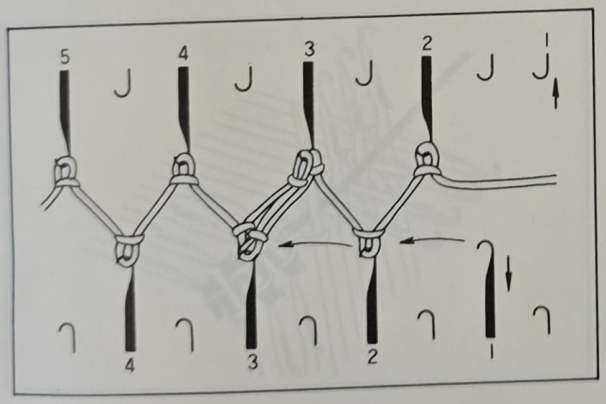


* **The second method.**
(When the Knitter side is used.)

(1) Transfer the stitch on the third Knitter needle from the end to the second Knitter needle.

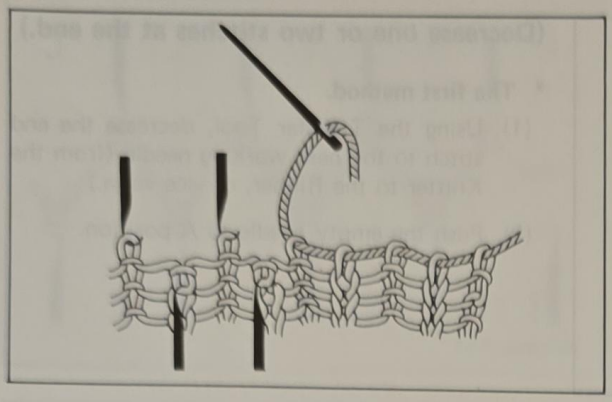


(2) Transfer the two stitches on the second Knitter needle to the empty third needle. Transfer the stitch on the first Knitter needle to the empty second needle.



(3) Now transfer the second Ribber stitch onto the third Ribber needle and the first ribber stitch onto the second Ribber needle. Push the empty needles to A position.

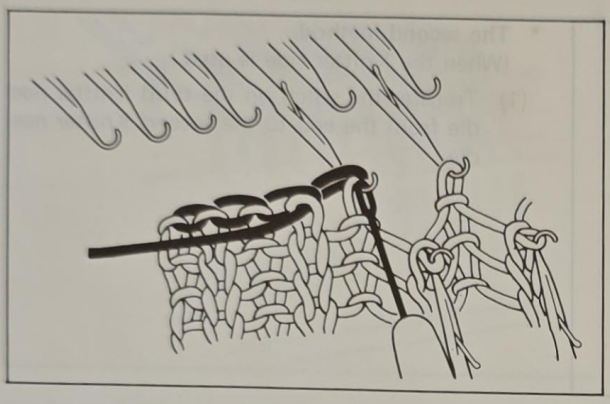
* If the Ribber side is used as the right side, follow the instructions decribed above, reversing "the Knitter" to read "the Ribber" and "the Ribber to read "the Knitter".



(Decreasing multiple stitches at the edge.)

* **The First method.**

* Insert the Tapestry Needle threaded with waste yarn, into the stitches on both Beds as shown left and hold the stitches. Push the empty needles to A position.

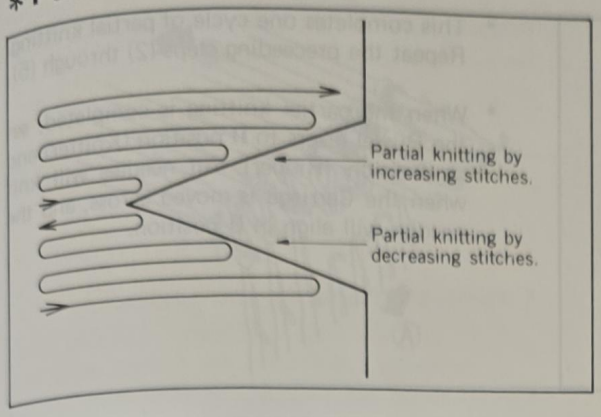


* **The Second method.**

(1) Transfer the required number of stitches to be increased from the Knitter to the Ribber or vice versa. When the Knitter side is used, transfer to the Knitter side and when the Ribber side is used, transfer to the Ribber side.

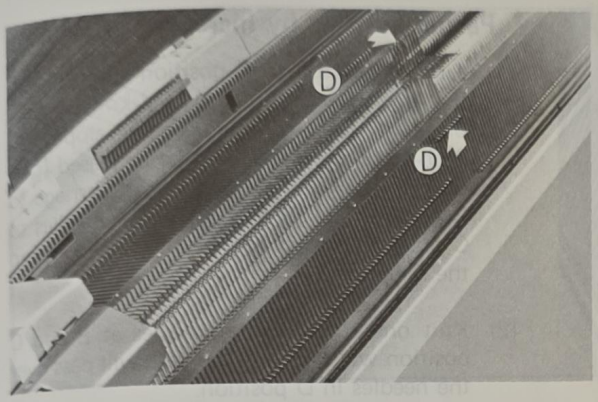
(2) Cast off the stitches transferred to one side by the chain method.

* Partial knitting *



* Partial knitting is effected with Russel Levers in **I** position (Knitter) and **—** position (Ribber).
Leaving these Levers in **II** position (Knitter) or **=** position (Ribber) will knit the needles in D position and disrupt the knitting operation.

* In the case of knitting pushing the end needle to D position like K3. P3. rib (wide ribbing), variation swing, pile knitting and drive lace knitting, etc., push the needle to C position since needles in D position can not knit when partial knitting.

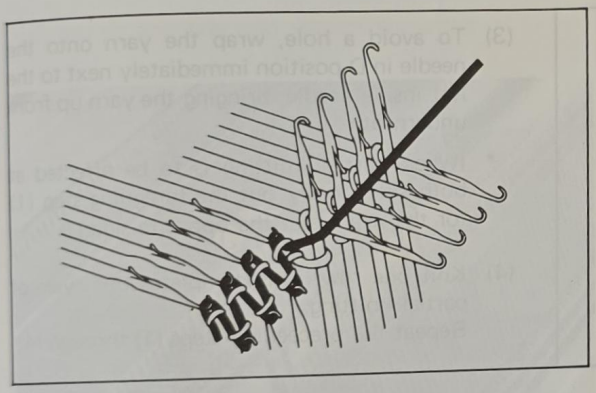


(Partial knitting for stitches without involving "swing")

This method applies to double rib, K1. P1. rib, K2. P2. rib, K2. P1. rib, K3. P3. rib (wide ribbing), punch tuck rib, pin-tuck, English and double English rib, etc.

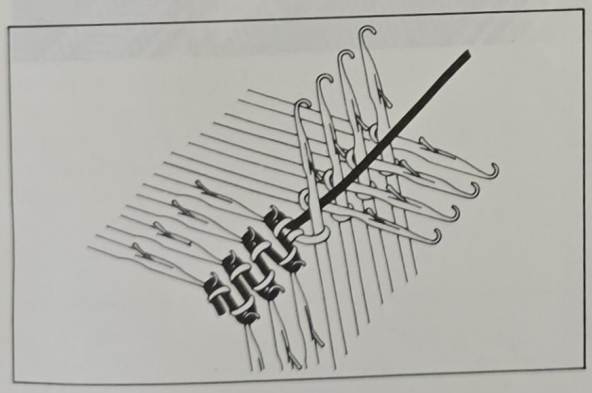
* Partial knitting by decreasing stitches.

(1) Set the Russel Levers on the Knitter and Ribber Carriages to **I** mark and **—** mark before knitting.



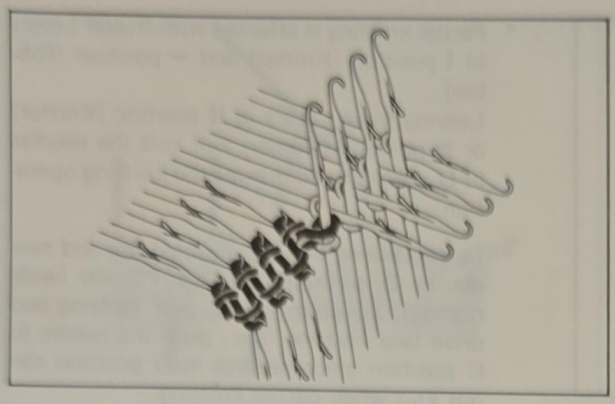
(2) The Carriage must be on the opposite side of the stitches to be decreased (partial). For example, the Carriage should be at the left side if the partial is on the right side. Push only the needles to be decreased on the right side to D position.

(3) Move the Carriage from left to right. The yarn will pass over the needles in D posiiton and the needles will not knit.



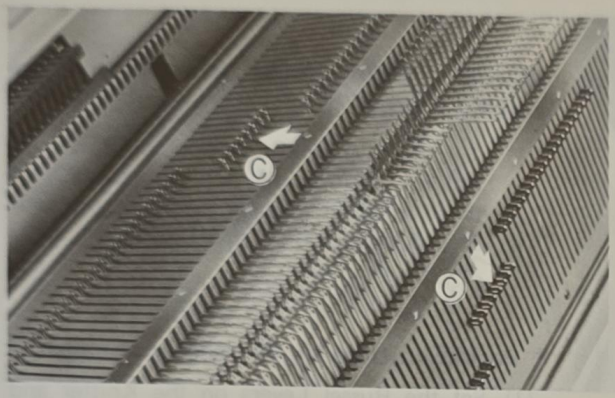
(4) To avoid a hole wrap the yarn onto the needle in D position immediately next to the last inside stitch, by bringing the yarn up from underneath.
(When partial knitting is to be effected on both sides, carry out the preceeding step (2) for the needles at the opposite side (left side).)

(5) Knit one row.



* This completes one cycle of partial knitting. Repeat the preceeding steps (2) through (5).

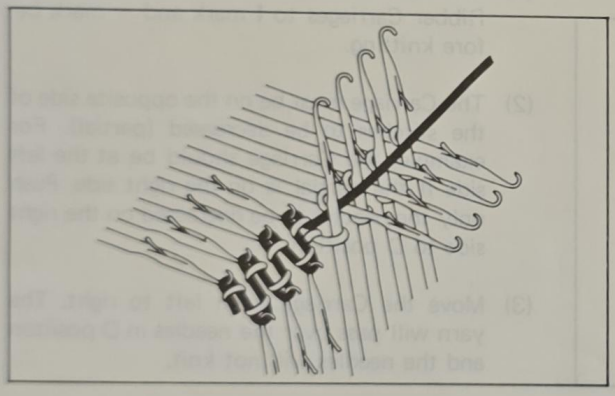
* When the partial knitting is completed, set the Russel levers to **II** position (Knitter) and **=** position (Ribber). All needles will knit when the Carriage is moved across, and the needles will align in B position.



*** Partial knitting by increasing stitches.**

(1) First of all push to D position all needles in the area where rows of partial knitting take place, in order to obtain a gentle slope.
Push back the needles to be increased (partial) on the opposite side of the Carriage to C position. Be sure to push back needles to C position having their butts aligned within the range of C.

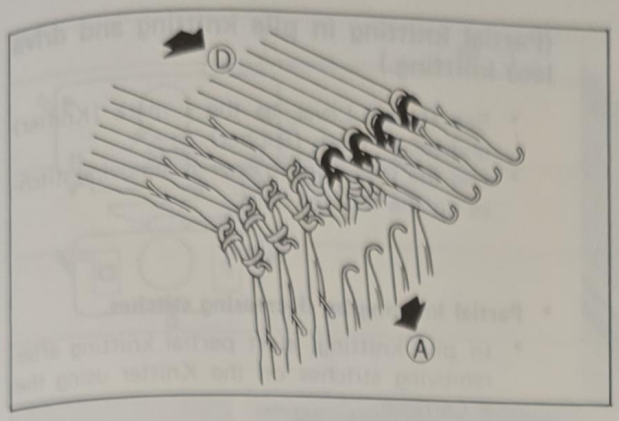
(2) Knit one row and the needles at B and C position will knit and the yarn will pass over the needles in D position.

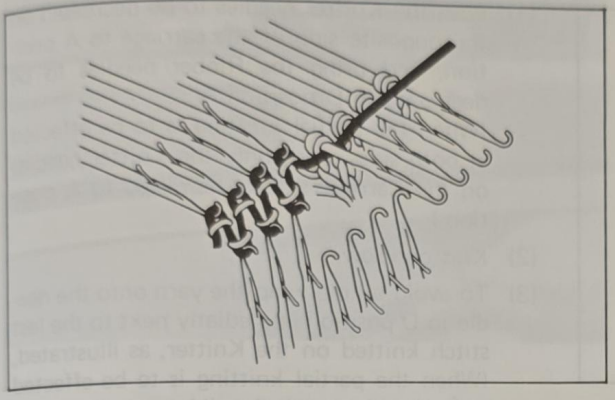


(3) To avoid a hole, wrap the yarn onto the needle in D position immediately next to the last inside needle, bringing the yarn up from underneath.

* (When partial knitting is to be effected at both sides, carry out the foregoing step (1) for the needles at the opposite side.)

(4) Knit one row. This completes one cycle of partial knitting.
Repeat the preceeding steps (1) through (4)





(Partial knitting for stitches involving "swing")

* The Knitter needles in D position cross the opposite Ribber needles in D position. You have noted this in other methods thus far explained. Under this condition of needles, you must not swing (by using the Swing Handle) the Needle Bed, or you will damage the crossed needles. So, a special technique of partial knitting as undermentioned is required for the swung English rib, variation swing, herringbone swing and the like stitches, all of which involve "swing".

* Set the Russel Levers to the I mark (Knitter and the — mark (Ribber).

*** Partial knitting by decreasing stitches.**

(1) Transfer the stitches to be decreased on the Ribber onto the corresponding needles on the Knitter.

(2) Push the Knitter needles to be decreased to D position.

(3) Knit one row.

(4) To avoid a hole wrap the yarn onto the needle in D position immediately next to the last stitch knitted on the Knitter, as illustrated.
(When partial knitting is to be effected at both sides, carry out the preceeding steps (1) and (2) on the needles at the opposite side.)

(5) Knit one row.

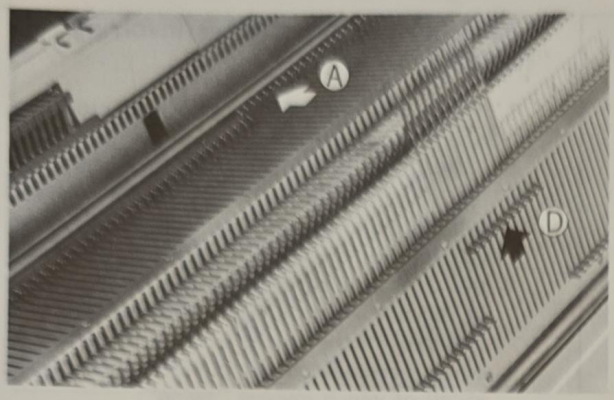
* This completes one cycle of partial knitting. Repeat the preceeding steps (1) through (5).

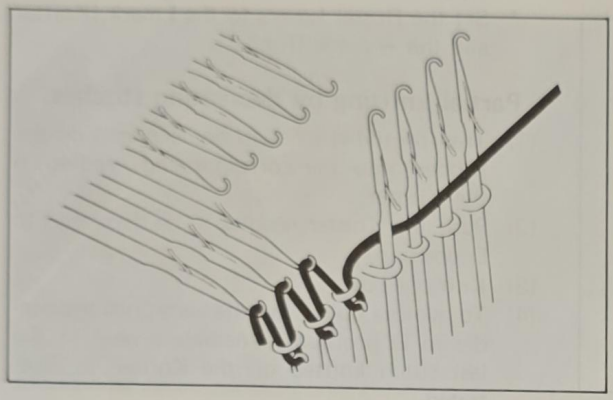
*** Partial knitting by increasing stitches.**

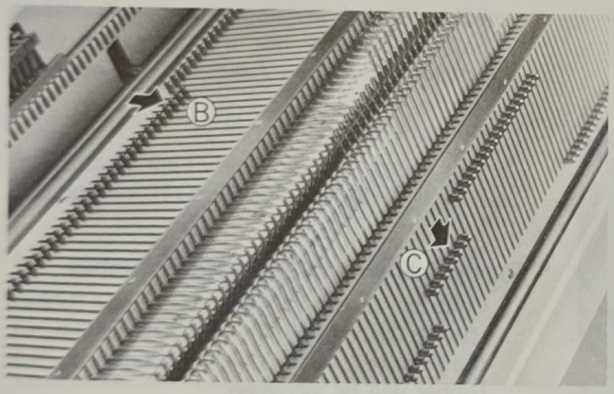
Contrary to decreasing, transfer the Ribber stitches lying upon the Knitter needles, to the Ribber, so the knitting needles on the Ribber will be increased.

Increase the knitting needles on the Knitter pushing back to C position.
Other operations should be carried out in the same manner as decreasing.

Note: * When working partial knitting in variation swing knit bringing 4 or 5, end needles to C position instead of D position.







(Partial knitting in pile knitting and drive lace knitting.)

* Set Russel Lever to the I mark (Knitter) and the — mark (Ribber).
* Use the P carriage in case of removing stitches on the Knitter only.

*** Partial knitting by decreasing stitches.**

* In pile knitting, start partial knitting after removing stitches on the Knitter using the P Carriage.

(1) Push the Knitter needles to be decreased on the opposite side of the carriage to A position, and bring the Ribber needles to be decreased to D position.
(When the partial knitting is to be effected at both sides, push only the Knitter needles on the Carriage side to be rested to A position.)

(2) Knit one row.

(3) To avoid a hole wrap the yarn onto the needle in D position immediatly next to the last stitch knitted on the Knitter, as illustrated, (When the partial knitting is to be effected at both sides, push the ribber needles to be decreased on the opposite side of the Carriage to D position.

(4) Knit one row.

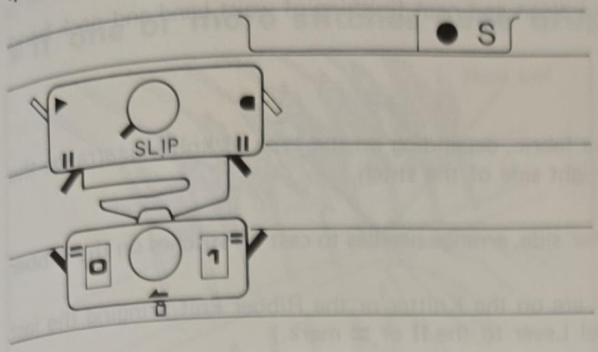
* Repeat the foregoing steps (1)—(4).

*** Partial knitting by increasing stitches.**

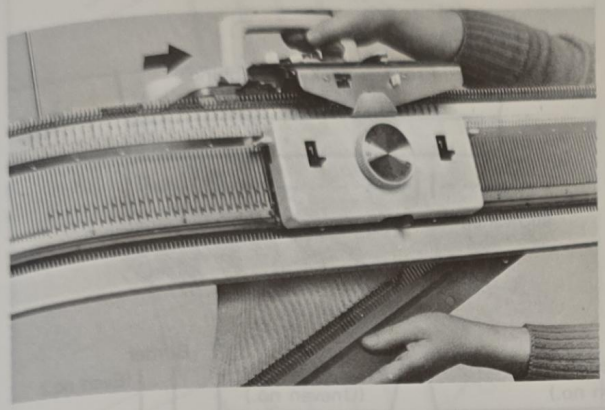
Contrary to decreasing, push the Knitter needles to be increased to B position and push back the Ribber needles to be increased to C position.
Other operations should be carried out in the same manner as decreasing.

Note:* In pile knitting and drive lace knitting, knit bringing the Ribber needles to C position using the P Carriage, but in partial knitting, as the P Carriage cannot be used, push 4 or 5 needles to D position, then to C position on both ends (4 or 5 needles inside the needles to be rested in D position, if any, on that side) and knit.

* Remove fabric from the machine *

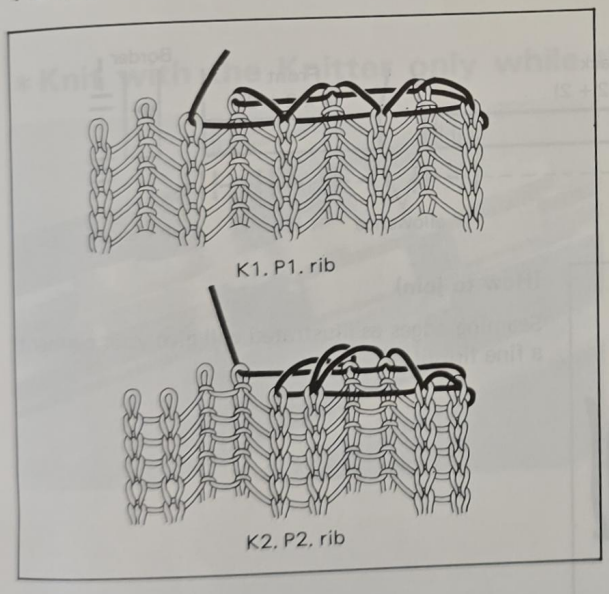


(1) Change the Cam arrangement of both the Knitter and Ribber Carriages, and set it as for tubular knitting as shown at left. Knit 8 to 10 rows with scrap yarn (waste knitting).



(2) Remove the Weights. Unthread the Yarn Feeder. Move the Carriage across. This will release the fabric from the working needles. When you move the Carriage across, the fabric will come off the machine. Be sure to hold the Cast-on Comb in such a manner as to support it so that you may catch the falling fabric.

* Bind off ribbed stitches *



This is a way to close open stitches on the upper edge of fabric knitted in ribbing.
The following is an explanation to finish fabric in K1. P1. rib, K2. P2. rib and K2. P1. rib which are usually used.

(1) Cut the yarn leaving approximately three times the knitting width.

(2) Bind off the open stitches with a threaded Tapestry needle, as illustrated.

* Knit border and waist band in ribbing *

* The explanation is given as follows concerning a clean and neat finishing of waist band and neck band for pullover and cardigan.

(How to cast-on)

I ..... knit stitch

When the Knitter is to knit the right side of the fabric, depending on the type of knitting, arrange the needles so that the Knitter needles are on the right side of the stitch.

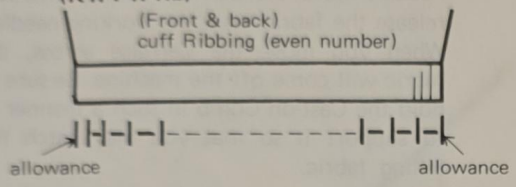
– ..... purl stitch

When the face side of the fabric is on the Ribber side, arrange needles to cast on stitches on the Ribber side.

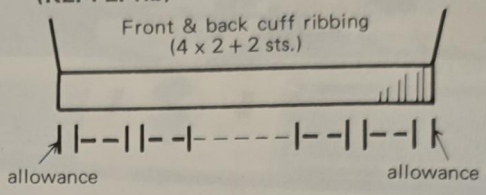
* When the end stitches, more than two stitches, are on the Knitter or the Ribber knit bringing the last needles to D position. (Be sure to set the Russel Lever to the II or = mark.)

*** Pullover**

(K1. P1. rib)

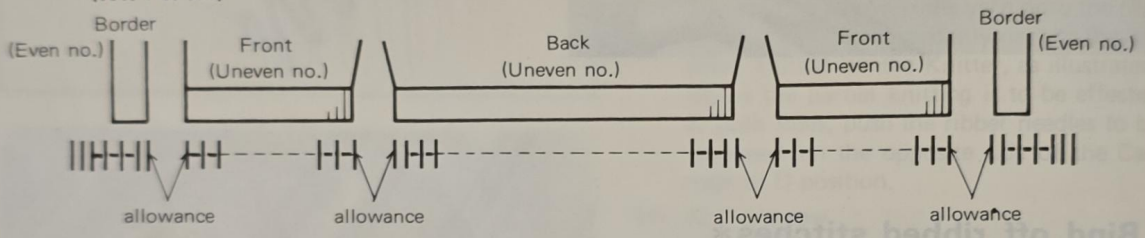


(K2. P2. rib)

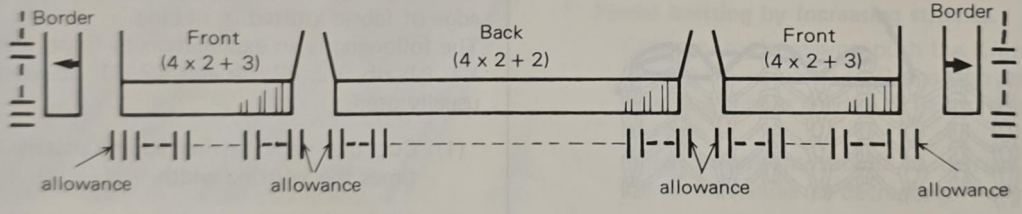


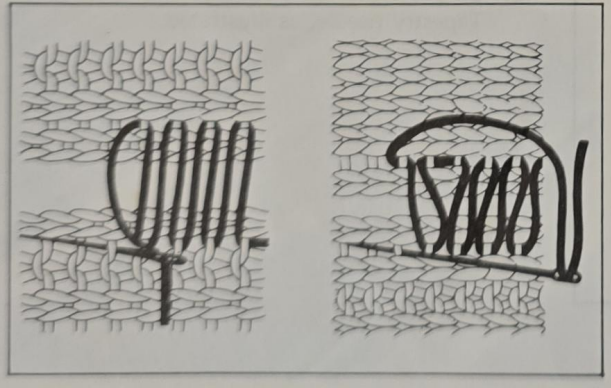
*** Cardigan**

(K1. P1. rib)



(K2. P2. rib)



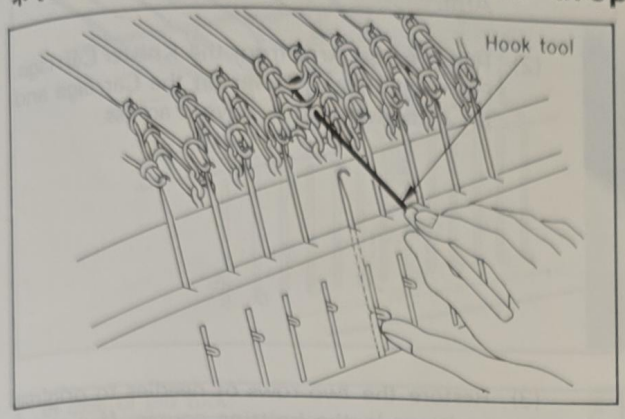


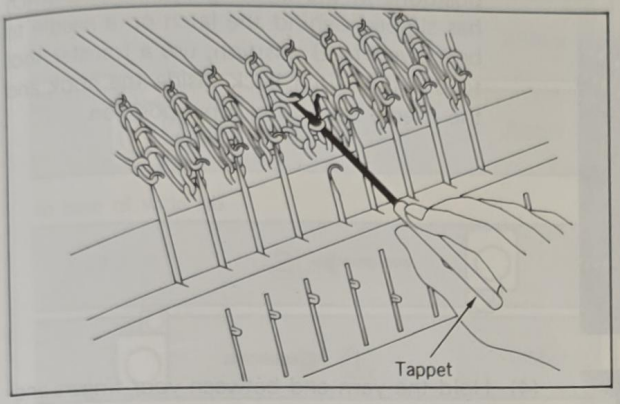
(How to join)

Seaming edges as illustrated will give your garment a fine finish.

6. HELPFUL HINTS

If one or more stitches have dropped





(1) During knitting, a "run" or unravelling can develop easily from a dropped stitch if the Weights are hanging (according to the standard practice).

(2) As soon as a dropped stitch is discovered, remove the Weights from the Comb. Lower the Ribber by pushing down the Drop Levers, to the medium position.

* **If a stitch is dropped 1–3 rows.**

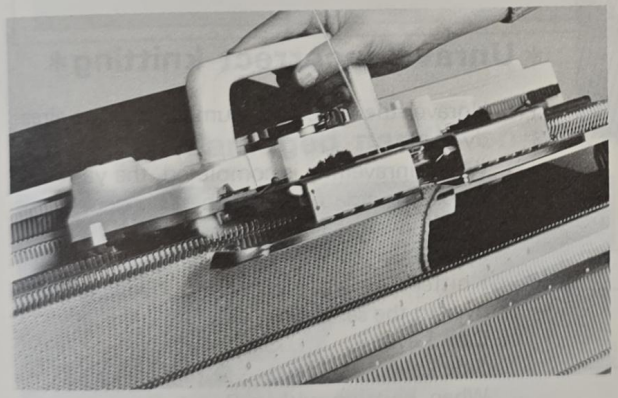
Using the Hook Took, pick up the dropped stitch and place it back onto the needle hook together with two loose yarns.
Reform stitches by using the needle.

* **If a stitch is dropped several rows.**

Pick up the dropped stitch using the Tappet and reform stitches and hook the last stitch on the needle. If the stitch on the Knitter side is dropped, insert the Tappet from the rear side of the fabric. If the stitch on the Ribber side is dropped, insert the Tappet from your side.

* After all the stitches have been reformed, raise the Ribber and align needles.

Knit with the Knitter only while the Ribber is connected.



(1) Transfer all Ribber stitches to the Knitter needles.

(2) Disconnect the Ribber Carriage from the Knitter Carriage by pushing the Link Knob to the right.

(3) Lower the Ribber to its fullest extent by pushing down the Drop Levers twice.

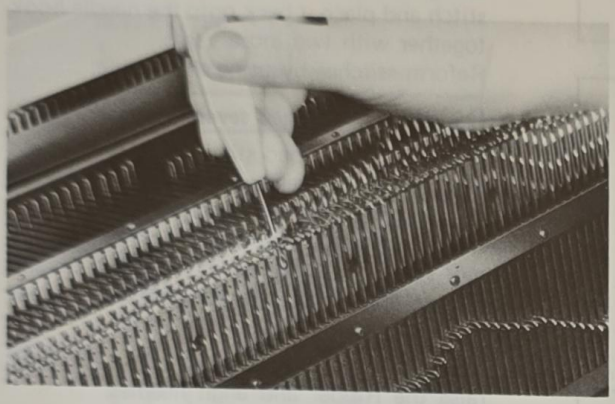
(4) Remove the Ribber Arm.

(5) Install the Knitter Arm, and operate the Knitter.

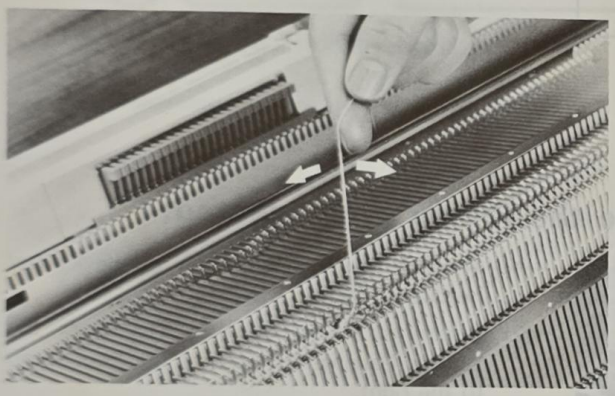
* If the Carriage jams *

(1) Disconnect the Ribber Carriage from the Arm.

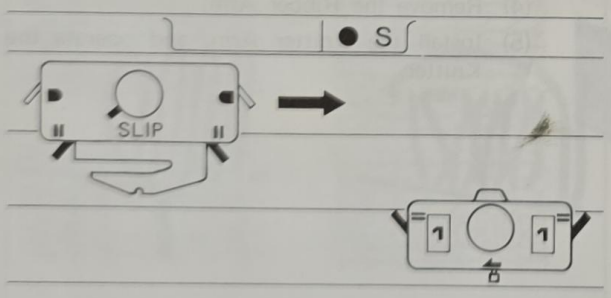
(2) Remove the Arm from the Knitter Carriage. Push the Release Lever on the Carriage and tilt it backward and move it across.



(3) Restore the two rows of needles to original positions in the knitting course. If a stitch has slipped behind the latch on a needle to be moved to B position, use a transfer tool to put the stitch back inside the hook and the needle back to original position.



(4) Hold the yarn end between your fingers and pull slightly. Work the yarn back and forth across the knitted row (two rows of needles). Unravel the yarn from the needle hooks. Continue unravelling in a zigzag pattern until unravelled and the yarn comes to the Carriage side.

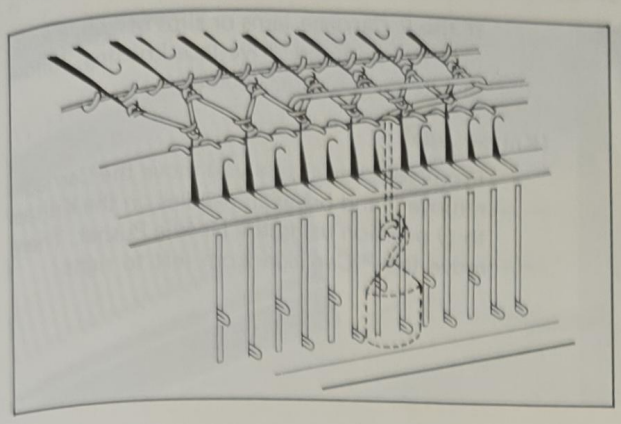


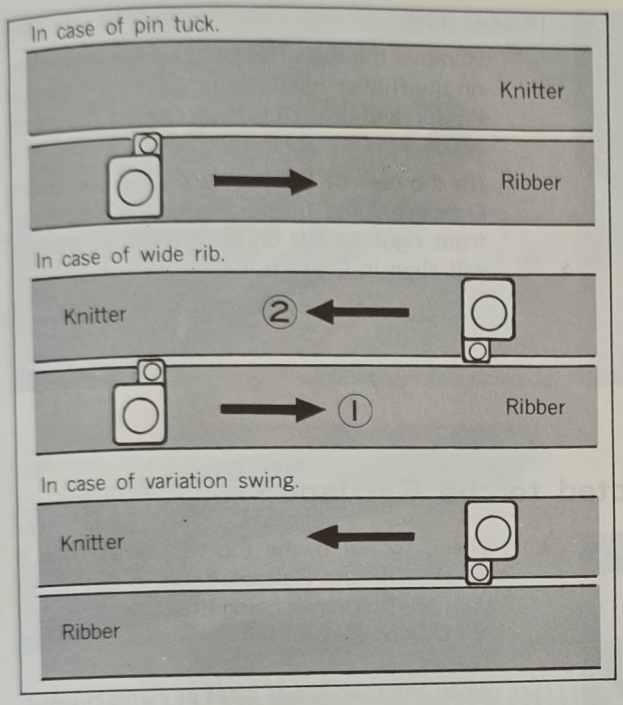
* Unravel incorrect knitting *

(1) Unravel the necessary number of rows already made.

(2) When unravelling is completed, the yarn may be on the side opposite the Carriage. In this case, move the Ribber Carriage in a tilted position over to the yarn side, then move the Knitter Carriage, with the following settings, over to the same side.
Cam Lever.....SLIP
Side Levers..... ● (right and left)
When knitting with a Punch Card, turn the Punch Card back by the number of rows unravelled. Set the Stop Knob to ● mark, and operate the Carriage to memorize the pattern of the next row. (Refer to the Knitter Instruction Book.)

If edge stitches float





* When the edge stitches tend to float the use of the Edge Weight is a standard practice, and has been explained previously. This tendency, to float if noted, is due mostly to too many rows between the weighted row and the row on the Needle Bed.
* Moving the Weights up, as shown, at regular intervals of 10 to 15 rows during the progress of your knitting operation will remedy floating stitches.
  The use of the Hanger Comb is also practical to keep stitches from being floated.

(When stitches on the full length float and knitting can not be worked.)

If floated stitches are not restored by use of the Edge Weight and the Hanger Comb, push needles to C position using the P Carriage.

(In case of tubular knitting.)

Push the needles to be knitted next to C position using the P Carriage (without the P Presser).

(In case of pin tuck.)

Push the Ribber needles to C position for the rows of pin tuck using the P Carriage.

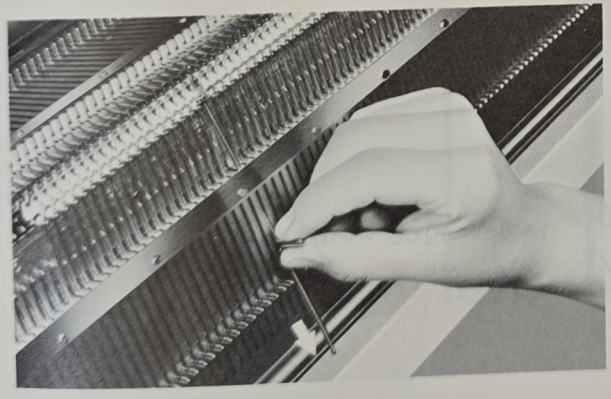
(In case of wide rib.)

Push the needles on both Beds to C position every row using the P Carriage. Firstly, move the P Carriage from left to right on the Ribber, and right to left on the Knitter.

(In case of variation swing.)

Knit pushing needles on the Bed having more number of needles (on the Knitter) to C position using the P Carriage.

Replace damaged needle on the Ribber



The method of needle replacement explained for the Knitter applies to the Ribber. The procedure is as follows:

Pull the Needle Retainer out of the Needle Bed. Move the damaged needle all the way to the upper end of the needle groove (D position). Lift the needle out of the groove by lifting the butt. To replace the new needle, insert it into the groove with the hook first.

* If the P Carriage jams *

If the P Carriage jams or slips off while knitting the pile and drive lace knitting, follow the steps mentioned below.

(Knitter side)

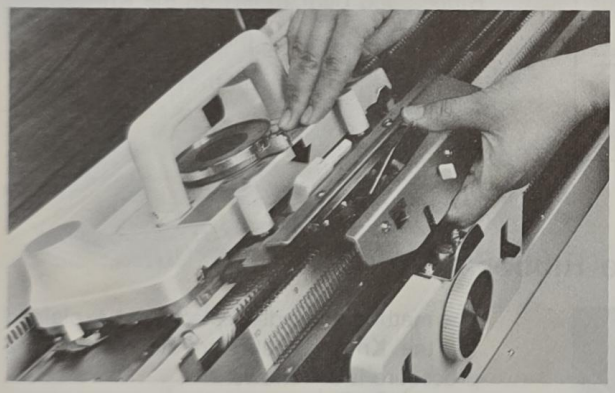
From whichever side you move the Carriage, remove it and bring all needles on the Knitter to D position using the Needle Pusher. Then, move the P Carriage from left to right.

(Ribber side)

Remove the P Carriage and bring the needles on the Ribber to D position using the Needle Pusher and knit the next row in the same way.

(In the case of (3), page 20, bring needles to D position and further, move the P Carriage from right to left on both ways, so needles will align in C position.)

* If the Arm is not firmly connected to the Carriage *

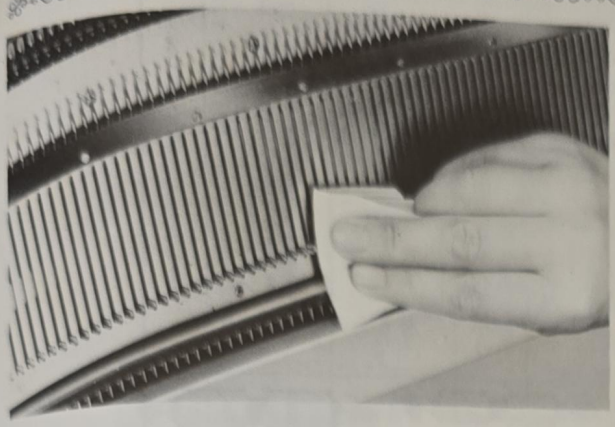


(1) Check to see if the top of the Carriage is restored. If the Release Lever is pushed to right and the top is being lifted, the Arm cannot be mounted.

(2) When the Cam Lever is set at PUNCH LACE or KNIT-IN, the Arm cannot be connected correctly. Be sure that the Cam Lever is set to STOCKINET before connecting the Arm.

Check comb is swinging freely right across needle bed.

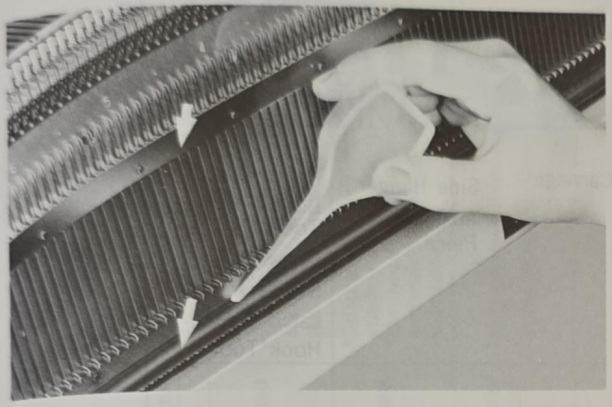
7. MAINTENANCE AND SERVICING



Proper care and lubrication is the key to excellent operation and condition for a long enjoyable life of you Ribber.

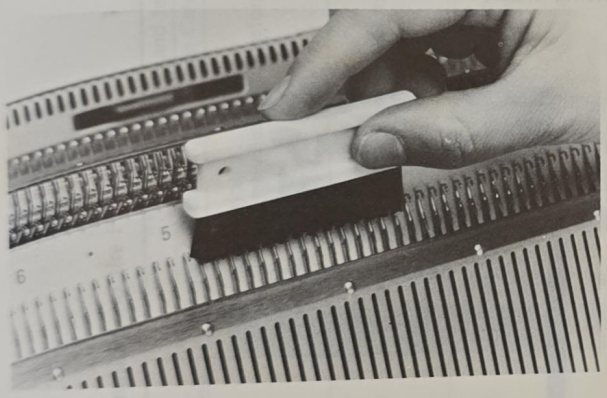
* Lubrication *

(1) Clean the with a dry cloth, removing stains, dust, lint, etc. The Rails, Needle Beds, Carriage Pipes and the like should be wiped with greater care.
After cleaning, rub the latch-needle butts with a clean cloth dampened with machine oil.



(2) Give a drop of oil to the rail at two or three places, and run the Carriage back and forth two or three times. This will spread the oil evenly along the rail.

(3) Store the Ribber in a dry place when it is not in use.



* After each use *

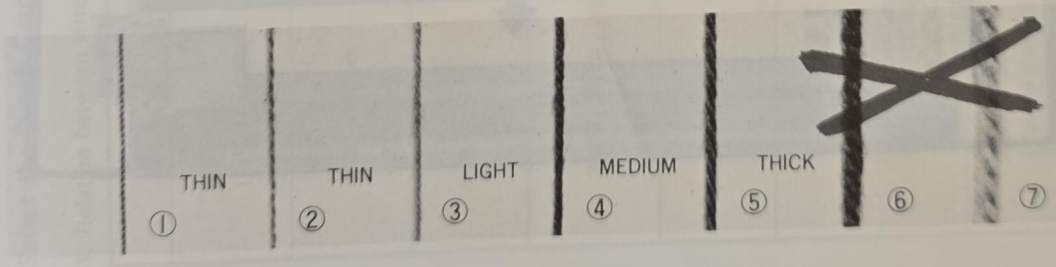
(1) Brush the lint off the Needle Bed and associated parts.

(2) Wipe the metal surfaces with oil cloth to prevent rust.

(3) When the case becomes dirty, wipe off the dirt with a soft cloth dampened with solution of neutral cleanser to clean the case.

Weights of yarn

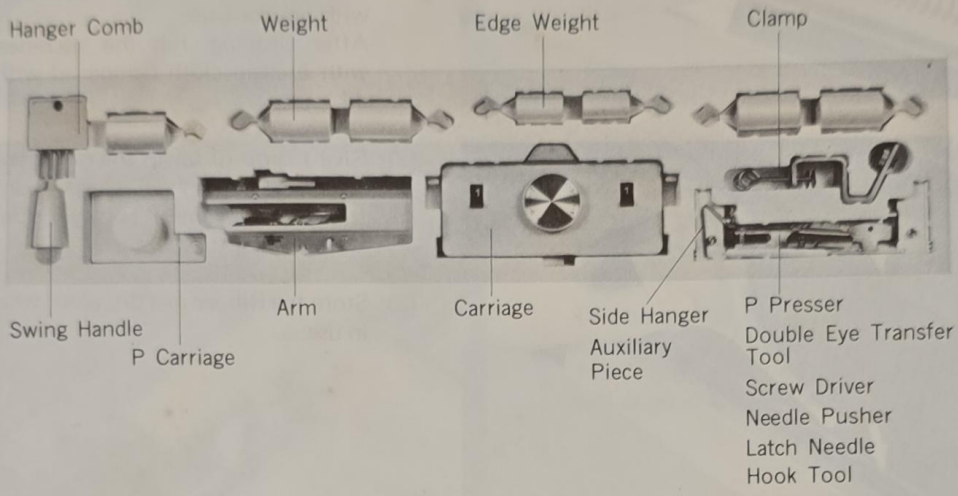
(Actual size)



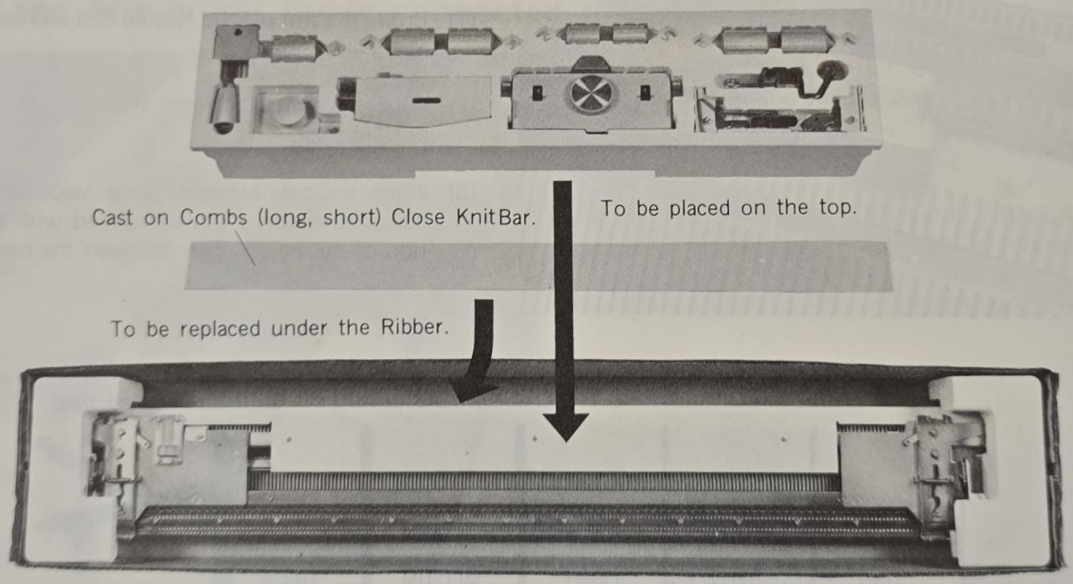
8. REPACK THE RIBBER

(1) Disassemble the Ribber by reversing the procedure for assembling.
Set the Swing Handle at **H–5** before pulling it out.

(2) Replace the Carriage and Accessories as shown below.



(3) Replace the Ribber and Accessories in the following order.



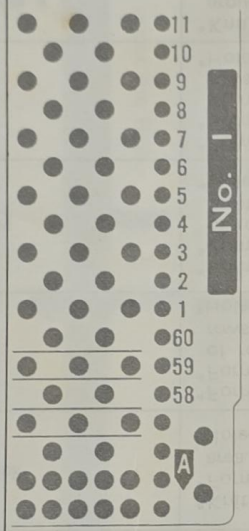
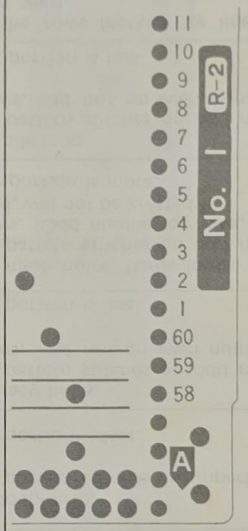
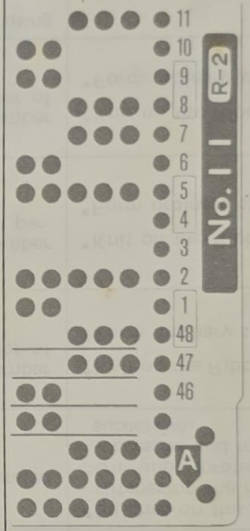
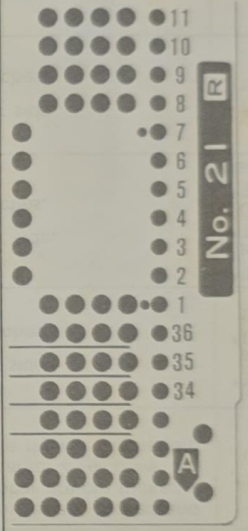
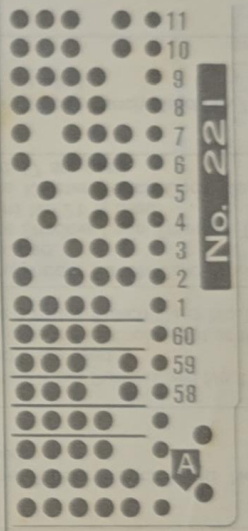
Select the Punch Card:

1. Relation between stitch formation and the Punch Card.

	Function and features of the Punch Card.		The Punch Cards to be used.
	Perforated area of the Punch Card.	Unperforated area of the Punch Card.	
Punch rib (Tuck rib stitch)	*Knit double rib. *Form pattern stitches on unperforated area. *Holed portion is less.	*Stitches on the Knitter are tucked and stitches on the Ribber are stretched. *On unperforated area, two rows are successive and more than two stitches are not successive.	*The Knitter Punch Card No.2, 4, 7, 9, 10, 12 are used. *In case the L Knob is set at the L mark, the Knitter Punch Card No.8, 11 are used.
Punch pin tuck	*Knit double rib. *Form pattern stitches on unperforated area. *Holed portion is less.	*Stitches on the Knitter are tucked and stitches on the Ribber are pin tucked. *On unperforated area 2–4 rows are successive and more than 3 stitches are successive.	*The Ribber Punch Card No.9, 10 are used.
Drive lace	*Form lacy holes. *Form pattern stitches on odd number of rows, and not on even number of rows. *Holed portion is less.	*Knit on the Ribber side. *Form ordinary stitches.	*The Ribber Punch Card No.1, 2, 3, 4, 5, and 6 are used. *In case the L Knob is set at the L mark, the Knitter Punch Card No.15 is used.
Mesh knitting	*Form mesh holes. (large loops) *Form pattern stitches on odd number of rows. (Odd number of rows, if perforated, will not be knitted.) *Holed portion is more.	*Knit on the Ribber side. *Form ordinary stitches.	*The Ribber Punch Card No.7, 8, 9, 10, are used. *The Shadow Lace Transfer Tool Punch Card No.21 is used. *The Knitter Punch Card No.1, 10, 13 and 17 are used.
Punch pile	*Form pile loop. *Form pattern stitches on odd number of rows, and not on even number of rows. *Holed portion is less.	*Knit on the Ribber side. *Form ordinary stitches.	*The Ribber Punch Card No.7, 8, 9, and 10 are used.
Double jacquard (Use the Yarn Changer)	*Knit the rows marked by line using ground yarn. *Knit the rows not marked using contrast yarn.	*Knit on the Ribber side.	*The Yarn Changer Punch Card No.11, 12, 13, 14, 15, 16, 17, 18, 19, and 20. *The Knitter Punch Card with which the Card memory No.2 is used to start knitting. No.2, 7.
	*The relation between the row knitted in ground yarn and the knitted in contrast yarn. When row for ground yarn is perforated, row for contrast yarn is not perforated. When row for ground yarn is not perforated, row for contrast yarn is perforated.		
Shadow lace (Use the Shadow Lace Transfer Tool)	*Knit double rib. *Perforated area are lined on reversed triangle line. *Form lacy holes on the oblique lines of triangle.	*Knit on the Ribber side.	*The Shadow Lace Transfer Tool Punch Card No.21, 22, 23, 24, and 25 are used.

2. Identification of the Punch Cards.

Five kinds of the Punch Cards are sold excluding the NP Cards (for original design.). For identification of the Card, a series of numbers are printed on each set of the Cards as decribed below.

	The Punch Cards accompanying the Knitter.	The Punch Cards accompanying the Ribber.	The Punch Card accompanying the Yarn Changer.	The Punch Card accompanying the Shadow Lace Transfer Tool.	Optional Punch Cards.
Card No.					
Sheets	No. 1 ~ No.20 (20 sheets)	No. 1 ~ No.10 (10 sheets)	No.11 ~ No.20 (10 sheets)	No.21 ~ No.25 (5 sheets)	No.221 ~ (Each set contains 10 sheets. 20 sets are available.)

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